

# American River Basin

## Attachment 3: Work Plan

### Supporting Documents

Att3\_IG1\_ARB\_Workplan\_3of10 includes the following:

Project No.	Project Name	Supporting Documentation Included	Notes
1	City of Roseville ASR Program – Phase 2	Woodcreek North Pump Station Conformed Plans & Specs	The proposed project will be similar to the Woodcreek North Pump Station. Plans and specifications for the proposed project will therefore be similar to the plans and specs of the Woodcreek North Pump Station project.
2	Secret Ravine Fish Passage Improvement Project	Secret Ravine Fish Passage Improvement Plan 90% Submittal	The 90% Design package for the proposed project have been included.
3	E.A. Fairbairn Groundwater Well Project	Improvement Plans for Well No. 164 Well 164 Profile and Casing Specifications Well 164 and Well 153 Technical Specifications	The proposed project will be similar to previous well projects by the City of Sacramento. The plans and specs for the proposed project will therefore be similar to the plans and specs for the City's Wells No. 153, 164 and 165.
4	Shasta Park Reservoir and Well Project	Improvement Plans and Contract Specifications for Elkhorn Reservoir Improvement Plans for Well No. 164 Well 164 Profile and Casing Specifications Well 165 and Well 153 Technical Specifications	The proposed project includes a reservoir similar to the Elkhorn Reservoir. Plans and Specs for the Elkhorn Reservoir have therefore been included.  The proposed project will be similar to previous well projects by the City of Sacramento. The plans and specs for the proposed project will therefore be similar to the plans and specs for the City's Wells No. 153, 164 and 165.

## Woodcreek North Pump Station Conformed Plans





IMPROVEMENT PLANS  
FOR  
WOODCREEK NORTH  
PUMP STATION

8301 WOODCREEK OAKS BLVD.  
ROSEVILLE, CA 95747

CITY WIDE PROJECT NUMBER: 060242  
ENGINEERING NUMBER: 001906

ALL WORK SHALL CONFORM TO THE FOLLOWING CODES:  
2001 CALIFORNIA BUILDING CODE (CBC)  
2001 CALIFORNIA MECHANICAL CODE (CMC)  
2001 CALIFORNIA PLUMBING CODE (CPC)  
2004 CALIFORNIA ELECTRICAL CODE (CEC) W/ CITY OF ROSEVILLE AMENDMENTS  
2005 CALIFORNIA ENERGY STANDARDS  
2001 CALIFORNIA FIRE CODE (RFC) W/CITY OF ROSEVILLE AMENDMENTS

BUILDING DATA:  
OCCUPANCY GROUP: F-1, ENTIRE FACILITY  
ALLOWABLE MAXIMUM AREA (CBC TABLE 5-B): 8,000 SF  
ALLOWABLE MAXIMUM HEIGHT (CBC TABLE 5-B): 40 FT  
ALLOWABLE MAXIMUM STORIES (CBC TABLE 5-B): 2 STORIES  
ACTUAL AREA: 1,382 SF  
ACTUAL HEIGHT: 17'-ONE STORY  
ACTUAL OCCUPANT LOAD: 5  
TYPE OF CONSTRUCTION: V-N  
FIRE SUPPRESSION: FIRE EXTINGUISHERS THROUGHOUT

TITLE 24 ENERGY STANDARDS:  
THIS FACILITY IS EXEMPT FROM CALIFORNIA TITLE 24 ENERGY EFFICIENCY STANDARDS. IT MEETS THE CRITERIA OF A THERMOSTATICALLY CONTROLLED, PROCESS ENVIRONMENT SPACE AS DESCRIBED IN SECTION 2.2 BASIC SCOPE AND APPLICATION CONCEPT.

TITLE 24 ADA ACCESSIBILITY REQUIREMENTS:  
THIS FACILITY IS EXEMPT FROM CALIFORNIA TITLE 24 ADA ACCESSIBILITY REQUIREMENTS.

SEPARATE PERMIT REQUIRED BY CITY OF ROSEVILLE FIRE DEPARTMENT:  
HAZARDOUS MATERIAL PERMIT

DEFERRED SUBMITTALS:  
ROOF TRUSSES ARE A DEFERRED SUBMITTAL

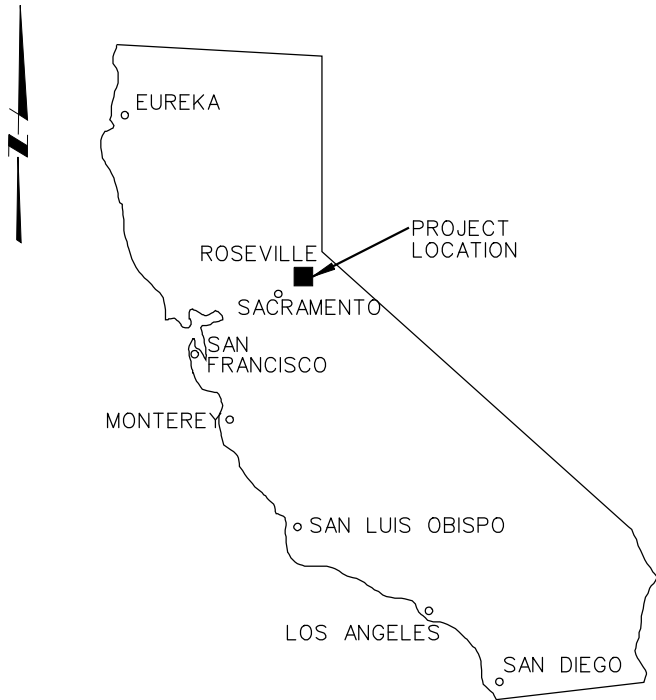
CONFORMED DRAWING

CITY OF ROSEVILLE ENVIRONMENTAL UTILITIES APPROVED BY:	
DERRICK WHITEHEAD DIRECTOR	DATE
KELYE MCKINNEY ENGINEERING MANAGER	DATE

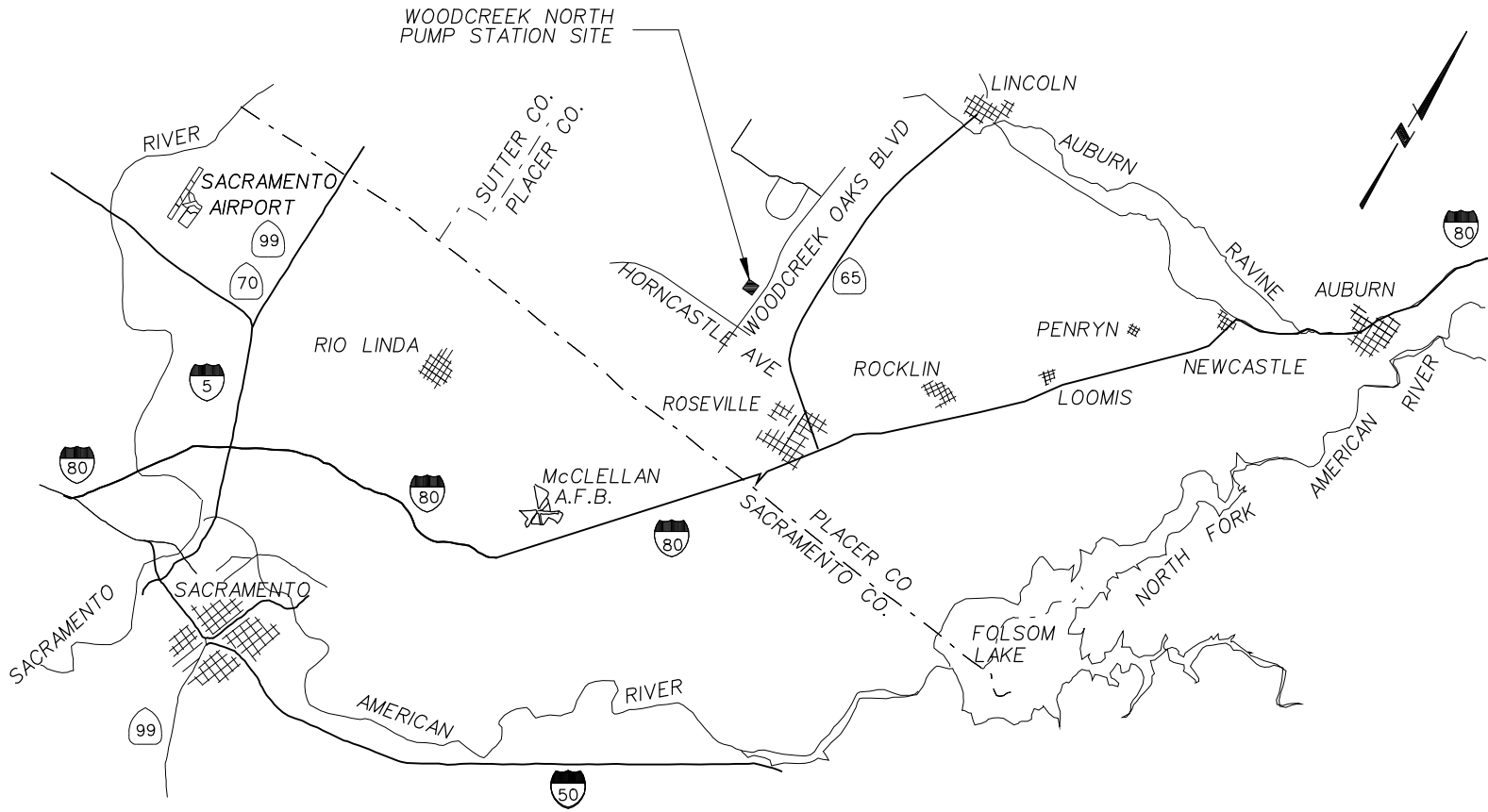
CITY OF ROSEVILLE UTILITY REPRESENTATIVES			
UTILITY	REPRESENTATIVES		PHONE
U.S.A. TELEPHONE GAS ELECTRIC FIRE WATER SEWER CABLE T.V. FIBER OPTIC STORM DRAIN	U.S.A. ROSEVILLE TELEPHONE PACIFIC GAS & ELECTRIC ROSEVILLE ELECTRIC ROSEVILLE FIRE DEPT. CITY OF ROSEVILLE CITY OF ROSEVILLE AT&T BROADBAND ROSEVILLE TELEPHONE CITY OF ROSEVILLE	GENE CORNTHWAITE LOUISE DELATEUR MIKE BONOMI KEN WAGNER KELYE MCKINNEY KELYE MCKINNEY ANDREW KOTZ GENE CORNTHWAITE KELYE MCKINNEY	800-642-2444 786-1206 889-3269 774-5618 774-5805 774-5751 774-5751 648-8350 786-1206 774-5751



File: C:\Documents and Settings\egosse\Desktop\Project Transfer Files\Woodcreek Transfer\WDCK\_Export\Import\wdcrk\_g02\_CNF.dgn User: egosse Plot Date: 13-JUN-2007 15:23



VICINITY MAP  
NOT TO SCALE



LOCATION MAP  
NOT TO SCALE

LIST OF DRAWINGS

G-01	COVER PAGE
G-02	LOCATION AND VICINITY MAP & LIST OF DRAWINGS
G-03	SYMBOLS, SECTION AND DETAIL IDENTIFICATION
G-04	ABBREVIATIONS
GC-01	CIVIL GENERAL NOTES & STANDARD DETAILS
GC-02	CITY OF ROSEVILLE GENERAL NOTES
C-01	CIVIL SITE PLAN
C-02	CIVIL UTILITIES PLAN
C-03	CIVIL SITE GRADING PROFILES
C-04	CIVIL PIPE PROFILES
C-05	SITE ACCESSIBILITY PLAN
A-01	ARCHITECTURAL FLOOR PLAN AND ROOF PLAN
A-02	EXTERIOR ELEVATIONS
A-03	INTERIOR FINISH & DOOR SCHEDULES SECTIONS AND DETAILS
A-04	BUILDING & WALL SECTIONS
GS-01	STRUCTURAL GENERAL NOTES AND STANDARD DETAILS I
GS-02	STRUCTURAL STANDARD DETAILS II
GS-03	STRUCTURAL STANDARD DETAILS III
S-01	STRUCTURAL PLANS AND SECTIONS
S-02	STRUCTURAL ROOF PLAN
S-03	STRUCTURAL SECTIONS AND DETAILS I
S-04	STRUCTURAL SECTIONS AND DETAILS II
S-05	STRUCTURAL SECTIONS AND DETAILS III

GM-01	MECHANICAL PIPE SCHEDULE AND GENERAL NOTES
GM-02	STANDARD MECHANICAL DETAILS I
GM-03	STANDARD MECHANICAL DETAILS II
M-01	MECHANICAL FLOOR PLAN
M-02	PUMP PLAN AND SECTIONS
M-03	SECTIONS AND DETAILS
H-01	HVAC & PLUMBING FLOOR PLAN
GE-01	SYMBOLS
GE-02	ABBREVIATIONS AND NOTES
GE-03	SAMPLE AS-BUILTS
GE-04	DETAILS - I
GE-05	DETAILS - II
GE-06	DETAILS - III
GE-07	SAMPLE WIRE LABELING FORMAT
E-01	POWER AND CONTROL PLAN,
E-02	LIGHTING AND RECEPTACLE PLAN
E-03	GROUNDING PLAN
E-04	SINGLE LINE DIAGRAM
E-05	EQUIPMENT ELEVATION
E-06	SCHEMATICS - I
E-07	SCHEMATICS - II
E-07A	SCHEMATICS - III
E-08	PANELBOARD AND LIGHTING SCHEDULES, RADIO DIAGRAM
E-09	CONDUIT AND CABLE SCHEDULES
E-10	GENERATOR CONNECTION PANEL
E-11	PLC CONTROL PANEL LAYOUT

E-12	PLC CONTROL PANEL DETAILS
E-13	PLC CONTROL PANEL POWER DISTRIBUTION DIAGRAM
E-14	PLC CONTROL PANEL DISCRETE INPUT
E-15	PLC CONTROL PANEL DISCRETE OUTPUT
E-16	PLC CONTROL PANEL ANALOG INPUT
E-17	PLC CONTROL PANEL ANALOG OUTPUT
E-18	ELECTRICAL LIGHTING TITLE 24
E-19	ROSEVILLE ELECTRIC POWER DETAILS - I
E-20	ROSEVILLE ELECTRIC POWER DETAILS - II
GI-01	INSTRUMENT SYMBOLS AND ABBREVIATIONS
GI-02	PROCESS SYMBOLS
GI-03	INSTALLATION DETAILS
I-01	WELL PUMP P&ID
I-02	HYPOCHLORITE SYSTEM P&ID
I-03	WATER QUALITY MONITORING SYSTEM

1	ADD SHEET GE-07 (ADD. 2)	EAG	4/07		
NO.	REVISIONS	BY	DATE		

BENCH MARK	CJM
ELEVATION _____ DATUM _____	CJM
DESCRIPTION _____	
_____	
_____	
_____	

DRAWN BY:	CJM
CHECKED BY:	CHECKED
SCALE:	NONE
DATE:	10/06/06
PROJECT NO:	1511331



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING

LOCATION AND VICINITY MAP AND  
LIST OF DRAWINGS

G-02

	CONCRETE (PLAN AND SECTION)
	GROUT OR SAND (PLAN AND SECTION)
	BRICK (PLAN AND SECTION)
	CMU (PLAN AND SECTION)
	STEEL/METAL/FRP (SMALL SCALE SECTION)
	CHECKERPLATE OR SOLID FRP GRATING (PLAN)
	CHECKERPLATE (SECTION)
	GRATING (PLAN)
	GRATING OR SOLID FRP GRATING (SECTION)
	SAFETY GRATING (PLAN)
	SAFETY GRATING (SECTION)
	RAILING (PLAN)
	WOOD (ELEVATION OR PLAN)
	LUMBER (NOMINAL)
	LUMBER (TRIMMED)
	GLULAM (SECTION)
	GLULAM (ELEVATION)
	PLYWOOD (SMALL SCALE)
	STRUCTURE OR FACILITY
	EXISTING STRUCTURE OR FACILITY
	FUTURE STRUCTURE OF FACILITY
	OPENING
	SPAN ARROW
	EARTH
	GRAVEL/DRAINROCK/AGGREGATE BASE
	PIPE IN SECTION
	CL OR C
	PL OR P
	R/W
	FSMT
	TEMP_ESMT
	UTILITIES
	HP GAS
	2" W
	TEL
	HVAC
	27" SS
	OHW
	27" SD
	FOC
	COMM
	FENCE (NEW)
	FENCE (EXISTING)
	WATER COURSE
	TRAIL OF DIRT ROAD
	MAJOR CONTOUR LINE (NEW)
	MAJOR CONTOUR LINE (EXISTING)
	VEGETATION
	DROP INLET CATCH BASIN

	DUCT (FIRST DIMENSION DUCT SIDE SHOWN, SECOND DIMENSION DUCT SIDE NOT SHOWN)
	SUPPLY OR OUTSIDE AIR DUCT (FIRST DIMENSION, DUCT WIDTH)
	EXHAUST OR RETURN AIR DUCT (FIRST DIMENSION, DUCT WIDTH)
	CEILING SUPPLY DIFFUSER (SIZE IN INCHES)
	CEILING RETURN OR EXHAUST AIR GRILLE OR REGISTER (SIZE IN INCHES, WIDTH X HEIGHT)
	EXHAUST OR RETURN AIR GRILLE OR R REGISTER (SIZE IN INCHES, WIDTH X HEIGHT)
	SUPPLY GRILLE OR REGISTER (SIZE IN INCHES, WIDTH X HEIGHT)
	AIR TURNING VANES IN DUCT
	DEFLECTING DAMPER
	FIRE HOSE CABINET
	FIRE EXTINGUISHER
	UNIT HEATER
	BALL VALVE
	DIAPHRAGM VALVE
	CHECK VALVE
	PRESSURE REGULATING VALVE
	BACK-PRESSURE VALVE
	MOTOR OPERATOR FOR VALVES (M = ELECTRIC, P = PNEUMATIC)
	TEMPERATURE CONTROL VALVE
	SOLENOID VALVE
	MULTIPORT VALVE - 3 WAY
	MULTIPORT VALVE - 4 WAY
	FLOAT OPERATED VALVE
	NEEDLE VALVE
	PRESSURE RELIEF VALVE
	ANGLE VALVE
	HOSE BIBB (H/B)
	INJECTOR OR EDUCATOR
	AIR VACUUM AND AIR RELEASE ASSEMBLY
	PIPE ANCHOR
	GRADE BREAK
	RIDGE LINE
	CUT/FILL OR DAYLIGHT LINE
	FLOW LINE
	SLOPE ON PAVED SURFACE
	BERM SLOPE (HORIZ. TO VERT)

	POWER POLE
	PIPELINE (CIVIL SHEETS) 24" DIA AND LARGER
	PIPELINE (CIVIL SHEETS) 12" DIA TO 20" DIA
	PIPELINE (CIVIL SHEETS) 10" DIA AND SMALLER
	ISOLATION VAULT & MAJOR BLOWOFF VAULT (IN PLAN)
	NEW ELECTRIC UTILITIES
	NEW TELEPHONE UTILITIES:
	FIRE HYDRANT
	MANHOLE
	PRESSURE CLEANOUT TO GRADE
	CLEANOUT TO GRADE
	REDUCER OR INCREASER (PROVIDE SIZE)
	ELECTROLYSIS TEST STATION
	WALL CLEANOUT
	FLOOR CLEANOUT
	HUB DRAIN
	FLOOR DRAIN
	FLOOR SINK
	CHANGE IN PIPING MATERIAL
	BACKWATER VALVE
	BACKFLOW PREVENTER
	STOP GATE
	SLIDE GATE
	SLUICE GATE
	GATE VALVE, BURIED WITH VALVE BOX
	BUTTERFLY VALVE, BURIED WITH VALVE BOX
	ECCENTRIC PLUG VALVE, BURIED WITH VALVE BOX
	LUBRICATED PLUG VALVE, BURIED WITH VALVE BOX
	GATE VALVE
	BUTTERFLY VALVE
	ECCENTRIC PLUG VALVE
	LUBRICATED PLUG VALVE
	GLOBE VALVE
	SOIL BORING
	BENCH MARK

	PRESSURE GAUGE
	PRESSURE GAUGE WITH DIAPHRAGM SEAL
	PRESSURE SWITCH
	PRESSURE SWITCH WITH DIAPHRAGM SEAL
	FLANGED FITTING
	MECHANICAL-TYPE FITTING (GROOVED)
	SCREWED, WELDED, SOCKET-WELD, BELL AND SPIGOT OR HUBLESS FITTING
	SLEEVE TYPE COUPLING
	FLANGED ADAPTER - SET SCREW TYPE
	MECHANICAL TYPE COUPLING
	FLEXIBLE COUPLING
	UNION
	QUICK DISCONNECT COUPLER
	CAPPED END OR PLUGGED END
	BLIND FLANGE
	REDUCER OR INCREASER
	STRAINER
	DRAIN
	FLOW TUBE
	MAGNETIC METER
	DENSITY METER
	PROPELLER METER
	ORIFICE PLATE AND FLANGES
	ROTAMETER
	CONDENSATE TRAP
	PIPE SUPPORT (IN PLAN)
	PULSATION DAMPENER
	EXPANSION CHAMBER WITH RUPTURE DISC
	RUPTURE DISC
	FLOW SIGHT GLASS
	FINISHED ELEVATION
	EXISTING ELEVATION
	BUMPED HEAD

SECTION AND DETAIL IDENTIFICATION	
SECTION IDENTIFICATION	
	SECTION LETTER
SECTION	
	SECTION
SHEET ON WHICH SECTION IS SHOWN	SHEET ON WHICH SECTION IS CUT
DETAIL IDENTIFICATION	
	DETAIL NUMBER
DETAIL	
	DETAIL
SHEET ON WHICH DETAIL IS SHOWN	SHEET ON WHICH DETAIL IS CALLED-OUT
STANDARD DETAIL IDENTIFICATION	
	DETAIL NUMBER
DETAIL	
	DETAIL
STANDARD DETAILS ARE LOCATED ON DISCIPLINE GENERAL SHEETS, IN NUMERICAL ORDER	
ELEVATION IDENTIFICATION	
	ELEVATION NUMBER
ELEVATION	
	ELEVATION
SHEET ON WHICH ELEVATION IS SHOWN	SHEET ON WHICH ELEVATION IS CALLED-OUT
PIPING IDENTIFICATION	
SEE PIPING SCHEDULE	
MATERIAL GROUP NUMBER	
	PIPE DIAMETER
	FLUID ABBREVIATION
EQUIPMENT IDENTIFICATION	
SEE EQUIPMENT SCHEDULE/SPECIFICATIONS	
EQUIPMENT DESIGNATOR	
EQUIPMENT NUMBER	
	AREA NUMBER
MISCELLANEOUS	
	ROOM NUMBER
	ACCESSORY NUMBER
	DOOR NUMBER
	WALL TYPE NUMBER
	WINDOW NUMBER
	DRIVEWAY / ACCESS RAMP
	HORIZONTAL AND VERTICAL CONTROL POINT
DISCIPLINE SPECIFIC SYMBOLS ARE SHOWN ON THE DISCIPLINE GENERAL DRAWINGS.	
FOR WELDING SYMBOLS USE AMERICAN WELDING SOCIETY STANDARD SYMBOLS.	
CONFORMED DRAWING	
SYMBOLS, SECTION AND DETAIL IDENTIFICATION	
G-03	

G-04

CIVIL GENERAL NOTES

1.

PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES IN AND AROUND THE AREAS OF NEW CONSTRUCTION. THE CONTRACTOR SHALL POT HOLE FOR EXISTING UTILITIES PRIOR TO SUBMITTAL OF SHOP DRAWINGS.
2.

THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES TO REMAIN.
3.

LOCATIONS OF UNDERGROUND UTILITIES SHOWN ON THE DRAWINGS WERE OBTAINED FROM AVAILABLE RECORDS. NEITHER THE OWNER NOR ENGINEER ASSUMES ANY RESPONSIBILITY FOR UTILITIES NOT SHOWN OR NOT IN THE LOCATION SHOWN. THE CONTRACTOR SHALL VERIFY ALL LOCATIONS AND ELEVATIONS AND SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT UTILITY LINES WHETHER SHOWN OR NOT SHOWN.
4.

THE CONTRACTOR SHALL CONTACT THE UTILITY AGENCIES FOR FIELD LOCATION OF UTILITIES, AT LEAST 48 HOURS PRIOR TO START OF CONSTRUCTION.
5.

THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE FROM DAMAGE. ALL IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE EXPEDITIOUSLY REPAIRED OR RECONSTRUCTED AT THE CONTRACTOR'S EXPENSE WITHOUT ADDITIONAL COMPENSATION.
6.

THE CONTRACTOR SHALL COMPLY WITH THE STATE DEPARTMENT OF HEALTH SERVICES CRITERIA FOR THE SEPARATION OF WATER MAINS, STORM DRAINS AND SANITARY SEWERS AS SET FORTH IN SECTION 64630, TITLE 22 OF THE CALIFORNIA ADMINISTRATIVE CODE.
7.

ALL BUILDING COORDINATES ARE TO OUTSIDE CORNER OF COLUMN OR BUILDING.
8.

PRIOR TO ANY CONNECTION TO AN EXISTING UTILITY, THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY AGENCIES.
9.

THE CONTRACTOR SHALL DISPOSE OF ALL NON-ORGANIC WASTES SUCH AS OLD GUNITE, PIPING, ROCK RUBBLE ETC., AT AN APPROVED LANDFILL AT THE CONTRACTOR'S EXPENSE.
10.

THE CONTRACTOR SHALL SUBMIT A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AS PER THE CITY OF ROSEVILLE'S STANDARD DEVELOPMENT REQUIREMENTS FOR LARGER SITES SIGNED AND STAMPED BY A REGISTERED CIVIL ENGINEER PRIOR TO THE START OF CONSTRUCTION.

A.

ALL SLOPES SHALL BE PROTECTED FROM EROSION DURING ROUGH GRADING OPERATIONS AND THEREAFTER, UNTIL INSTALLATION OF FINAL GROUND COVER

B.

ALL SLOPE PROTECTION SWALES SHALL BE CONSTRUCTED AT THE SAME TIME AS BANKS ARE GRADED.

C.

THE CONTRACTOR IS RESPONSIBLE FOR THE CLEANLINESS OF THE SITE INCLUDING THE STORAGE AND REMOVAL OF SITE WASTE

D.

THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION AND MAINTENANCE OF EROSION CONTROL MEASURES CONTAINED WITHIN THE CONTRACT SPECIFICATIONS OR AS REQUIRED BY THE CITY OF ROSEVILLE. THE CONTRACTOR SHALL ALSO PROVIDE ANY ADDITIONAL EROSION CONTROL MEASURES E.G. HYDROSEEDING, MULCHING OF STRAW, SAND BAGGING DIVERSION DITCHES, ETC.) DICTATED BY FIELD CONDITIONS TO PREVENT EROSION OR THE INTRODUCTION OF DIRT, MUD, OR DEBRIS TO EXISTING PUBLIC STREETS OR ONTO ADJACENT PROPERTIES DURING ANY PHASE OF CONSTRUCTION OPERATIONS. SPECIAL ATTENTION SHALL BE GIVEN TO ADDITIONAL EROSION MEASURES NOTED ABOVE DURING THE PERIOD OF OCTOBER 15 TO APRIL 15.

11.

A DIG ALERT IDENTIFICATION NUMBER MUST BE ISSUED BEFORE A PERMIT TO EXCAVATE WILL BE VALID. FOR THE DIG ALERT ID NUMBER, CONTRACTOR SHALL CALL UNDERGROUND SERVICE ALERT AT 1-800-227-2600 AT LEAST 48 HOURS BEFORE ANY EXCAVATION IN THE VICINITY OF ANY EXISTING UNDERGROUND FACILITIES PER SPECIFICATION SECTION 01530.

12.

CONTRACTOR SHALL RESTORE ALL SURVEY MONUMENTS THAT ARE DAMAGED OR DESTROYED DURING CONSTRUCTION.

13.

CONSTRUCTION AT THE WORK SITE SHALL BE PERFORMED WITHIN THE PROPERTY LINES OR EASEMENTS SHOWN ON THE DRAWINGS AND SHALL PROVIDE RECORD OF SURVEY.

14.

THE CONTRACTOR SHALL BE RESPONSIBLE TO CLEAN AND MAINTAIN ANY CULVERTS DURING THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL REPAIR ALL SLOPE AND EROSION DAMAGE IN A MANNER APPROVED BY THE ENGINEER, THROUGHTOUT THE CONSTRUCTION PERIOD.
- GENERAL PAVING AND GRADING NOTES
1.

FINISHED GRADING SHALL BE SELF DRAINING, NO PONDING OR STANDING WATER SHALL BE ALLOWED.

2.

MATCH EXISTING GRADES AT NEW PAVEMENT LIMITS.
- GENERAL PIPING NOTES
1.

LOCATIONS FOR SMALL PIPING, 12-INCHES IN DIAMETER OR LESS, ARE APPROXIMATE AND SHALL BE SCALED FROM THE DRAWING FOR LOCATION.

2.

THE 16-INCH DIAMETER WATERLINE PIPING SHOWN ON THESE PLANS SHALL BE RESTRAINED JOINT DESIGN WITH HARNESS PROVIDED AT ALL SLEEVE TYPE COUPLINGS.

3.

THE CONTRACTOR SHALL PROVIDE A MINIMUM OF 36 INCHES COVER ON ALL PIPELINES UNLESS OTHERWISE SHOWN OR DIRECTED.

4.

ELEVATIONS SHOWN ARE TO INVERT (FLOWLINE) OF CONDUIT.

5.

STRAIGHT SLOPES SHALL BE MAINTAINED BETWEEN INVERTS SHOWN OR SPECIFIED.

6.

THE CONTRACTOR SHALL ADJUST ALL VALVE BOXES, PULL BOXES, CATCHBASINS, VAULTS AND MANHOLES TO FINISHED GRADE UNLESS OTHERWISE SHOWN OR AS SPECIFIED. MANHOLES IN OPEN FIELDS SHALL BE SET ONE FOOT ABOVE GRADE. APPROXIMATE RIM ELEVATIONS ARE SHOWN ON DRAWINGS.

7.

FOR PIPING INSIDE STRUCTURES SEE MECHANICAL DRAWINGS.
- SPECIAL CONSTRUCTION NOTES
1.

CONSTRUCTION WILL BE IN ACCORDANCE WITH CITY OF ROSEVILLE CONSTRUCTION STANDARDS. THESE IMPROVEMENT PLANS REFER TO CITY OF ROSEVILLE STANDARD DETAILS:

CST TB-2

HDPE & PVC STORMDRAIN PIPE ONLY (NONRIGID) BEDDING AND BACKFILL

CST TB-3

DEEP CUT "T" PATCH RECONSTRUCTION

CST DR-4

STANDARD PRECAST MANHOLE (DRAINAGE)

CST SS-1

SEWER MAIN TRENCH & BACKFILL

CST SS-2

SEWER MANHOLE STANDARD 48 INCH

CST SS-3

STANDARD SEWER MANHOLE FRAME & COVER

CST SS-4

SEWER SERVICE

CST SS-5

SEWER SERVICE CLEANOUT

CST W-1

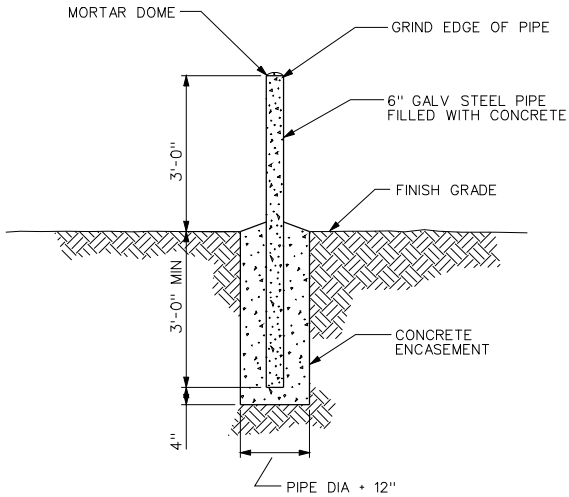
WATER MAIN TRENCH & BACKFILL

CST ST-20

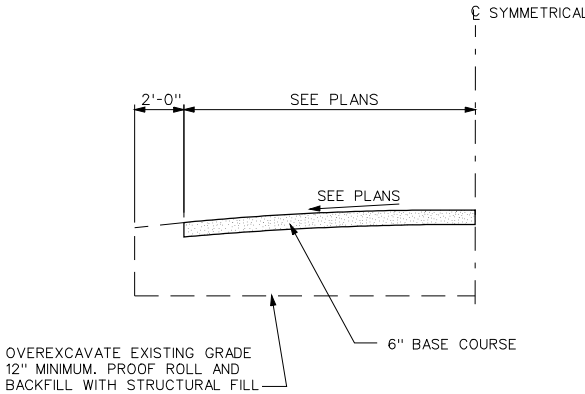
TYPE S DRIVEWAY APRON

CST-ST-38

BOLLARDS



GUARD POST  
REV 040302 C-114



GRAVEL ROAD SECTION  
REV 032904 C-132

NO.	REVISIONS	BY	DATE

BENCH MARK  
ELEVATION \_\_\_\_\_ DATUM \_\_\_\_\_  
DESCRIPTION \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DRAWN BY: CJM  
CHECKED BY: CHECKED  
SCALE: NONE  
DATE: 10/06/06  
PROJECT NO: 1511331



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING

CIVIL GENERAL NOTES &  
STANDARD DETAILS

GC-01

CITY OF ROSEVILLE PUBLIC IMPROVEMENTS REQUIREMENTS

GENERAL

1. ALL CONSTRUCTION SHALL CONFORM TO THESE PLANS, THE CITY OF ROSEVILLE STANDARD SPECIFICATIONS (DATED FEBRUARY 1986, REV. DECEMBER 1992), THE CITY OF ROSEVILLE IMPROVEMENT STANDARDS (DATED MAY 1993; STREETS SECTION UPDATE MARCH 2005) AND THE CITY OF ROSEVILLE CONSTRUCTION STANDARDS (DATED MAY 2001; STREETS SECTION UPDATE (MARCH 2005).
2. THE CITY OF ROSEVILLE IS A MEMBER OF THE UNDERGROUND SERVICE ALERT (U.S.A.) ONE-CALL SYSTEM. THE CONTRACTORS SHALL NOTIFY THE U.S.A. CENTER 48 HOURS IN ADVANCE OF PERFORMING ANY EXCAVATION WORK BY CALLING 1-800-642-2444.
3. THE CONTRACTOR SHALL MARK IN WHITE PAINT ALL AREAS TO BE EXCAVATED PRIOR TO CONTACTING U.S.A. ANY AREAS NOT MARKED WILL NOT BE SUBJECT TO U.S.A., AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE RESULTING FROM EXCAVATION.
4. THE CONTRACTOR SHALL EXPOSE AND VERIFY LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION OF THE NEW IMPROVEMENTS CONNECTING TO OR IN THE VICINITY OF THE SAME.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING MONUMENTS AND OTHER SURVEY MARKERS ON THE JOB SITE.
6. THE CONTRACTOR SHALL PLACE BOXED SURVEY MONUMENTS WITH 1-1/2" BRONZE HEAD SET IN CONCRETE (STD. DWG. ST-36) AT LOCATIONS SHOWN ON THESE PLANS.
7. A.C. SURFACE SHALL BE CUT TO A NEAT, STRAIGHT LINE PARALLEL WITH THE STREET CENTERLINE AND THE EXPOSED EDGE SHALL BE TACKED WITH EMULSION PRIOR TO PAVING. THE EXPOSED BASE MATERIAL SHALL BE GRADED, RECOMPACTED, AND RESEALED PRIOR TO PAVING.
8. ANY EXISTING CONCRETE SURFACE TO BE REMOVED SHALL BE SAW CUT TO A NEAT, STRAIGHT LINE.
9. ALL CONCRETE TO BE USED IN CURBS, DRIVEWAYS AND SIDEWALKS SHALL BE CLASS A (6 SACK).
10. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN THAT SHALL BE APPROVED BY ENGINEERING DIVISION BEFORE START OF WORK IN RIGHT-OF-WAY AND SHALL BE IN ACCORDANCE WITH 2003 MUTCD WITH CALIFORNIA SUPPLEMENT (2003 EDITIONS). AT LEAST ONE LANE IN EACH DIRECTION SHALL REMAIN OPEN TO TRAFFIC UNLESS OTHERWISE SHOWN ON THE PLANS. TRAFFIC CONTROL HOURS SHALL BE RESTRICTED FROM 08:00 TO 16:00 BETWEEN JUNE 11 AND AUGUST 17, 2007. AFTER AUGUST 17, TRAFFIC CONTROL WITH LANE CLOSURES THAT AFFECT TRAFFIC FLOW WILL REQUIRE NIGHT WORK, AND TRAFFIC CONTROL HOURS SHALL BE RESTRICTED FROM 19:00 TO 06:00 THE NEXT DAY. IF, AS A PART OF TRAFFIC CONTROL MEASURES, A ROADWAY CLOSURE HAS BEEN APPROVED, THE CONTRACTOR SHALL NOTIFY ENGINEERING DIVISION 72 HOURS IN ADVANCE OF SETTING UP THIS CLOSURE.
11. WHEELCHAIR RAMPS CONFORMING TO ALL ADA AND TITLE 24 REQUIREMENTS SHALL BE PLACED AT ALL NEW STANDARD CURB RETURNS (STANDARD DRAWING ST-27) AND STANDARD TYPE A-7 DRIVEWAYS. WHERE EXISTING RAMPS DO NOT MEET CURRENT ADA AND TITLE 24 REQUIREMENTS, THE RAMPS SHALL BE UPGRADED IN CONFORMANCE WITH MINIMUM TITLE 24 REQUIREMENTS. WHERE EXISTING RAMPS DO NOT INCLUDE DETECTABLE WARNING PANELS (TRUNCATED DOMES), PANELS SHALL BE RETROFITTED PER THE CONSTRUCTION STANDARDS.
12. DRAIN INLETS NOT WITHIN A PAVED AREA SHALL HAVE A 12" WIDE COLLAR OF 6" THICK P.C.C. OR 2" THICK A.C.
13. NOT USED
14. ALL UNDERGROUND UTILITIES WITHIN EXISTING OR PROPOSED CITY OF ROSEVILLE EASEMENTS SHALL REQUIRE A MINIMUM OF 90% COMPACTION ON THE TRENCH BACKFILL. COMPACTION OF BACKFILL BY JETTING IS NOT PERMITTED IN CITY OF ROSEVILLE RIGHT OF WAY AREAS OR WITHIN DEDICATED RECLAIMED WATER, STORM, SEWER OR WATER EASEMENTS AND MAINS.
15. THE CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION MEETING ONE-WEEK PRIOR TO STARTING WORK. MEMBERS OF THE CITY OF ROSEVILLE ENGINEERING DIVISION, ENVIRONMENTAL UTILITIES DEPARTMENT AND ALL OTHER UTILITY REPRESENTATIVES SHALL BE NOTIFIED BY THE CONTRACTOR AS TO THE DATE AND LOCATION OF THE MEETING.
16. PRIOR TO EXCAVATION OF TRENCHES 5 FEET OR DEEPER, THE CONTRACTOR SHALL SUBMIT TO THE PUBLIC WORKS DEPARTMENT OR ENVIRONMENTAL UTILITIES DEPARTMENT INSPECTOR A COPY OF THE COMPANY ANNUAL CALOSHA TRENCHING PERMIT AND A COPY OF THE COMPANY LETTER INFORMING CALOSHA OF THE TIME THE TRENCHING IS COMMENCING AND THE LOCATION OF THE WORK.
17. ALL PAINTED TRAFFIC STRIPES, ARROWS, AND PAVEMENT MARKINGS SHALL BE CONSTRUCTED WITH THERMOPLASTIC MATERIAL TO THE SPECIFICATIONS SET FORTH IN CHAPTER 3 OF THE 2003 MUTCD WITH CALIFORNIA SUPPLEMENT. NON- REFLECTIVE PAVEMENT MARKERS SHALL CONSIST OF CERAMIC MARKERSONLY CONFORMING TO CHAPTER 3 OF THE 2003 MUTCD WITH CALIFORNIA SUPPLEMENT.

18. THE DEVELOPERS CONTRACTOR SHALL TAKE EXTREME CARE TO PROTECT EXISTING SITE AND ADJACENT IMPROVEMENTS FROM DAMAGE. THE CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR OR MAKE REPLACEMENT OF ALL CRACKED AND OTHERWISE PRE-EXISTING DAMAGED PUBLIC IMPROVEMENTS ALONG THE FRONTAGE OF THE PROJECT SITE AND ANY DAMAGE RESULTING FROM CONSTRUCTION TO CURRENT CITY STANDARDS AND AT THEIROWN EXPENSE. THE EXTENT OF THE REPAIRS SHALL BE DETERMINED BY THE PUBLIC WORKS INSPECTOR AND SHALL BE COMPLETED PRIOR TO THE CITY ACCEPTANCE OF THE IMPROVEMENTS.
19. WHERE COMBINATIONS OF SIDEWALK OR CURB AND GUTTER ARE POURED CONTIGUOUS TO EXISTING, ALL ADJOINING EXISTING CONCRETE VERTICAL FACES SHALL BE DOWELED. ALL ABUTTING SIDEWALK ENDS SHALL BE DOWELED MID-SECTION VERTICALLY WITH TWO DOWELS FOR FOUR THROUGH SIX-FOOT WIDE SIDEWALK AND THREE DOWELS FOR WIDER SIDEWALK. ABUTTING CURB AND GUTTER ENDS SHALL BE DOWELED TWICE, 18 INCHES APARTAT GUTTER PAN MID-SECTION. DOWEL CONNECTIONS OF LONGITUDINAL RUNS OF SIDEWALK TO BACK OF CURB SHALL BE THREE FEET ON CENTER. ALL DOWELS SHALL BE 16 INCHES LONG, GRADE 60; #4 REBAR PENETRATING FOUR INCHES. THE DOWEL HOLE SHALL BE 5/8-INCH DIAMETER AT A SLIGHT HORIZONTAL ANGLE FROM PERPENDICULAR. THE PENETRATING PORTION OF THE DOWEL AND THE ENTIRE (CLEANED) VERTICAL SURFACE OF THE ADJOINING, EXISTING CONCRETE SHALL BE THOROUGHLY COATED WITH STATE STANDARD TWO-PART EPOXY.
20. WHEN SAWCUTTING WITHIN THE STREET FOR TRENCHING OR OTHER PURPOSES, CONTRACTOR SHALL GRIND 1/2" OF PAVEMENT BETWEEN THE LANE LINES (FROM LANE STRIPE TO LANE STRIPE) UPON COMPLETION OF THE SAWCUTTING AND OR TRENCHING WORK. WHERE THE SAWCUTTING OCCURS BETWEEN THE CURB AND GUTTER AND NEAREST LANE STRIPE (INCLUDING BIKE LANES), THE SAME 1/2" GRIND SHALL BE REQUIRED. CONTRACTOR TO PLACE A PETROMAT FABRIC OR APPROVED EQUAL BY THE CITY OF ROSEVILLE AND OVERLAY FROM LANE STRIPE TO LANE STRIPE, OR CURB TO LANE STRIPE AND RESTRIPE OR REPLACE ANY DELINEATORS REMOVED DURING THE GRIND.
21. ALL PUBLICLY MAINTAINED STORM DRAIN ON PRIVATE PROPERTY SHALL BE A MINIMUM OF 12 INCHES IN DIAMETER AND SHALL BE RCP CL IV, UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
22. FOR RESIDENTIAL SUBDIVISIONS, UNLESS OTHERWISE APPROVED BY THE FINAL GRADING OF THE PROJECT SITE SHALL BE CONSTRUCTED TO ACCOMMODATE A MAXIMUM DRIVEWAY SLOPE OF 14% FOR EACH RESIDENTIAL LOT, AS MEASURED FROM THE BACK OF THE SIDEWALK TO THE GARAGE (20-FT SET BACK). IT WILL REMAIN THE RESPONSIBILITY OF THE BUILDERS/DEVELOPER TO DESIGN A HOUSE THAT PROVIDES SUITABLE ACCESS TO THE PARCEL.
23. THE CONTRACTOR SHALL PLACE FILTER FABRIC BETWEEN THE INITIAL BEDDING AND BACKFILL AND THE TRENCH BACKFILL FOR SANITARY SEWERS DEPTH GREATER THAN 15 FEET MEASURED TO THE PIPE INVERT.

GRADING

1. GRADING SHALL CONFORM TO APPENDIX CHAPTER 33 UBC, LATEST EDITION, AND TO THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEERING REPORT BY WALLACE-KUHL & ASSOCIATES INC. (WKA No.6648.01) JULY 22, 2005.
2. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED AS SPECIFIED IN THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR THIS PROJECT OR AS DETERMINED BY THE CITY INSPECTOR. THE SWPPP IS CONSIDERED A DYNAMIC DOCUMENT AND WILL CHANGE AS CONDITIONS WARRANT. PERMANENT EROSION AND SEDIMENT CONTROL MEASURES WILL BE CONSTRUCTED AS SHOWN ON THE SWPPP PLAN.
3. LOTS SHALL BE GRADED WITH A CONSTANT SLOPE ALONG THE FRONTAGE OF THE RIGHT-OF-WAY, FROM BUILDING SETBACK LINE TO BACK OF SIDEWALK. ALL TEMPORARY AND PERMANENT SLOPES STEEPER THAN 4:1 ALONG THIS FRONTAGE SHALL HAVE EROSION NETTING INSTALLED.
4. ALL REAR LOT CORNER ELEVATIONS SHALL BE EQUAL TO OR GREATER THAN THE HIGHEST ADJACENT PAD GRADE UNLESS SPECIFICALLY SHOWN ON THESE PLANS AND APPROVED BY ENGINEERING DIVISION.
5. NON-POTABLE WATER SHALL BE SPRAYED ON ALL EXPOSED EARTH SURFACES DURING CLEARING GRADING, EARTH MOVING, AND OTHER SITE PREPARATION ACTIVITIES. THE EXPOSED EARTH SHALL BE WATERED THROUGHOUT THE DAY TO MINIMIZE DUST.
6. TARPULINS OR OTHER EFFECTIVE COVERS SHALL BE USED ON ALL STOCKPILED EARTH MATERIAL AND ON HAUL TRUCKS TO MINIMIZE DUST.
7. THE CITY SHALL HAVE THE AUTHORITY TO STOP ALL GRADING OPERATIONS, IF, IN OPINION OF CITY STAFF, INADEQUATE DUST CONTROL MEASURES ARE BEING PRACTICED OR EXCESSIVE WIND CONDITIONS CONTRIBUTE TO FUGITIVE DUST EMISSIONS.
8. ADJACENT STREET FRONTAGES SHALL BE SWEPT AT LEAST ONCE A DAY TO REMOVE SILT AND OTHER DIRT WHICH IS EVIDENT FROM CONSTRUCTION ACTIVITIES. REFER TO SCHEDULES WITHIN SWPPP.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING CONSTRUCTION VEHICLES LEAVING THE SITE ON A DAILY BASIS TO PREVENT DUST, SILT AND DIRT FROM BEING RELEASED OR TRACKED OFFSITE. REFER TO SWPPP FOR SPECIFIC REQUIREMENTS.

10. CONSTRUCTION SHALL STOP IF CULTURAL RESOURCES ARE SUSPECTED. IT IS POSSIBLE THAT PREVIOUS ACTIVITIES HAVE OBSCURED SURFACE EVIDENCE OF CULTURAL RESOURCES. IF SIGNS OF AN ARCHEOLOGICAL SITE, SUCH AS ANY UNUSUAL AMOUNTS OF STONE, BONE, OR SHELL, ARE UNCOVERED DURING GRADING OR OTHER CONSTRUCTION ACTIVITIES, WORK SHALL BE HALTED WITHIN 100 FEET OF THE FIND AND THE ROSEVILLE COMMUNITY DEVELOPMENT DEPARTMENT SHALL BE NOTIFIED. A QUALIFIED ARCHEOLOGIST SHALL BE CONSULTED FOR AN ON-SITE EVALUATION. THE ARCHEOLOGIST MAY REQUIRE ADDITIONAL MITIGATION.
11. SHOULD GRADING OPERATIONS UNCOVER HAZARDOUS MATERIALS, OR WHAT APPEARS TO BE HAZARDOUS MATERIALS, THE FIRE DEPARTMENT SHALL BE CONTACTED IMMEDIATELY AT (916) 774-5820. THE AREA, WHICH CONTAINS THE HAZARDOUS MATERIALS, SHALL BE MARKED OFF UNTIL AN INVESTIGATION BY A MEMBER OF THE FIRE DEPARTMENT IS CONDUCTED.
12. GRADES SHOWN OUTSIDE OF THE PUBLIC RIGHT OF WAY WITHIN THE APPROVED GRADING PLAN ARE SUBJECT TO FURTHER REVIEW AND MODIFICATION BY THE BUILDING DIVISION FOR COMPLIANCE WITH THE UNIFORM BUILDING CODE AND STATE OF CALIFORNIA TITLE 24 HANDICAP ACCESSIBILITY REQUIREMENTS.
13. THE CONTRACTOR/DEVELOPER IS EXPECTED TO COMPLY WITH THE FUGITIVE DUST CONTROL REQUIREMENTS FROM THE PLACER COUNTY AIR POLLUTION CONTROL DISTRICT: WWW.PLACER.CA.GOV/APCD

EROSION/SEDIMENT CONTROL

1. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED BY OCTOBER 5 OR AS APPROVED BY THE CITY ENGINEER AND SPECIFIED ON THE GRADING PLANS.
2. STRAW BALES SHALL BE STOCKPILED ON SITE AT A RATE OF 1.5 BALES PER ACRE BY SEPTEMBER 25. MEASURES SHALL BE PROVIDED TO KEEP STRAW DRY.
3. ALL SLOPES GREATER THAN 10:1 SHALL BE COVERED WITH BROADCAST STRAW AT A RATE OF 50 BALES OR 4000 POUNDS PER ACRE. FOR SLOPES 4:1 OR STEEPER, STRAW SHALL BE PRESSED IN PLACE. OTHER METHODS SHALL BE APPROVED BY THE ENGINEERING DIVISION.
4. SLOPES STEEPER THAN 4:1 AND ADJACENT TO CITY RIGHT OF WAY, FLOOD PLAINS, NATURAL DRAINAGES, PARK LAND OR DESIGNATED OPEN SPACE SHALL BE HYDROSEEDED.
5. ALL BARE AREAS, REGARDLESS OF SLOPE, WITHIN 50 FEET OF NATURAL DRAINAGES SHALL BE COVERED WITH STRAW AND PRESSED IN PLACE.
6. WHERE REQUIRED, BROADCAST SEED SHALL BE APPLIED AS FOLLOWS:

BLANDO BROME12 LBS/ACRE

ROSE CLOVER9 LBS/ACRE

AREAS WITH SANDY, DRY SOIL SHALL BE:

ZORRO ANNUAL FESCUE6 LBS/ACRE

ROSE CLOVER9 LBS/ACRE

16-20-0 FERTILIZER OR EQUIVALENT SHALL BE APPLIED AT A RATE OF 500 POUNDS PER ACRE. IF HYDROSEEDING/MULCHING IS USED, SEED QUANTITIES SHALL BE INCREASED BY 30 PERCENT.
7. NO GRADING OR TRENCHING, EXCEPT AS REQUIRED FOR EROSION OR SEDIMENT CONTROL, SHALL OCCUR WITHIN 35 FEET FROM THE CENTERLINE OF PERENNIAL AND INTERMITTENT DRAINAGE SWALES BETWEEN OCTOBER 5 AND APRIL 1 EXCEPT AS APPROVED BY THE DEPARTMENT OF FISH AND GAME.
8. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED FOLLOWING ALL STORMS TO ENSURE THAT ALL MEASURES ARE FUNCTIONING PROPERLY.
9. SEDIMENT AND TRASH ACCUMULATED IN DRAINAGES OR DETENTION BASINS SHALL BE REMOVED AS SOON AS POSSIBLE. IN ADDITION, OIL AND MATERIAL FLOATING ON WATER SURFACE MUST BE SKIMMED WEEKLY AND THE DEBRIS PROPERLY DISPOSED OF.
10. CONSTRUCTION ACTIVITIES OCCURRING BETWEEN OCTOBER 15 AND APRIL 1 SHALL HAVE EROSION AND SEDIMENT CONTROL MEASURES IN PLACE OR CAPABLE OF BEING PLACED WITHIN 24 HOURS. THE CONTRACTOR SHALL ENSURE THAT THE CONSTRUCTION SITE IS PREPARED PRIOR TO THE ONSET OF ANY STORM.
11. THE CONTRACTOR SHALL ESTABLISH A SPECIFIC SITE WITHIN THE DEVELOPMENT FOR MAINTENANCE AND STORAGE OF EQUIPMENT OR ANY OTHER ACTIVITY THAT MAY ADVERSELY CONTRIBUTE TO THE WATER QUALITY OF THE RUNOFF. THIS AREA SHALL HAVE A BERM LOCATED AROUND ITS PERIMETER. THIS AREA SHALL BE RESTORED TO ACCEPTABLE CONDITION UPON COMPLETION OF PROJECT.
12. HYDROSEEDING MAY BE CONSIDERED AS AN ALTERNATIVE TO BROADCAST STRAW SUBJECT TO THE ENGINEERING DIVISION BASED ON A REVIEW OF THE EXISTING SITE CONDITIONS (LOCATION, SLOPES, PROXIMITY TO STREAMS) AND TIME OF YEAR.

CITY OF ROSEVILLE FIRE DEPARTMENT GENERAL NOTES

1. AN APPROVED PROJECT SIGN SHALL BE PLACED AT VEHICLE ACCESS POINTS INTO THE PROJECT DURING CONSTRUCTION TO ASSIST EMERGENCY RESPONDERS. THE SIGN SHALL IDENTIFY THE ADDRESS, AS APPROVED BY THE CITY OF ROSEVILLE. SUCH SIGNS SHALL BE CLEARLY VISIBLE AND LEGIBLE FROM THE STREET FRONTING THE PROJECT.

2. PRIOR TO COMBUSTIBLE MATERIALS BEING BROUGHT TO THE SITE, FIRE APPARATUS ACCESS ROADS SHALL BE PROVIDED TO WITHIN 150 FEET OF ALL STRUCTURES AND COMBUSTIBLE STORAGE PILES. FIRE APPARATUS ACCESS ROADS SHALL BE FULLY PAVED AND SHALL BE DESIGNED TO SUPPORT THE IMPOSED WEIGHT OF A FIRE APPARATUS (34 TONS GVW), UNLESS PRIOR APPROVAL IS OBTAINED FROM THE FIRE DEPARTMENT FOR TEMPORARY ACCESS ROADS. ACCESS ROADS SHALL BE PROVIDED WITH A MINIMUM 20-FOOT ROADWAY WIDTH AND 13 FOOT 6 INCH VERTICAL CLEARANCE.
3. PRIOR TO COMBUSTIBLE MATERIALS BEING BROUGHT TO THE SITE, ANY REQUIRED ON-SITE FIRE HYDRANTS SHALL BE COMPLETED AND ACCEPTED BY THE ROSEVILLE FIRE DEPARTMENT.
4. CONSTRUCTION MATERIAL AND VEHICLES SHALL NOT OBSTRUCT FIRE APPARATUS ACCESS TO FIRE APPARATUS ROADS, FIRE HYDRANTS OR THE BUILDING.
5. BARRICADES SHALL BE PROVIDED TO PROTECT ANY NATURAL GAS METER, FIRE HYDRANT, FIRE DEPARTMENT CONTROL DEVICE, OR OTHER POSSIBLE PERTINENT EQUIPMENT OR DEVICES THAT MAY BE SUBJECT TO VEHICULAR DAMAGE.
6. PROVIDE AND MAINTAIN A MINIMUM 3-FOOT CLEAR SPACE AROUND FIRE PROTECTION EQUIPMENT.
7. NOT USED
8. THE BURNING OF COMBUSTIBLE CONSTRUCTION MATERIALS AND TRASH IS PROHIBITED.
9. ASPHALT AND TAR KETTLES SHALL NOT BE LOCATED WITHIN 20 FEET OF ANY COMBUSTIBLE MATERIAL, COMBUSTIBLE BUILDING SURFACE OR BUILDING OPENING. AN ATTENDANT SHALL BE WITHIN 100 FEET OF A KETTLE WHEN THE HEAT SOURCE IS OPERATING. A MINIMUM OF ONE (1) 20B:C PORTABLE FIRE EXTINGUISHER SHALL BE LOCATED WITHIN 30 FEET OF THE KETTLE, AND ON THE ROOF DURING ASPHALT COATING OPERATIONS.
10. DRYWALL AND OTHER TEMPORARY HEATING DEVICES SHALL BE OF AN APPROVED TYPE, LOCATED AWAY FROM COMBUSTIBLE MATERIALS AND ATTENDED AND MAINTAINED AT ALL TIMES. HEATING DEVICES SHALL NOT BE OPERATED AFTER NORMAL WORKING HOURS WITHOUT BEING ATTENDED TO ON AN HOURLY BASIS.
11. CUTTING AND WELDING OPERATIONS SHALL CONFORM TO THE HOT WORK PROVISIONS OF ARTICLE 49 OF THE CITY FIRE CODE. A FIRE WATCH SHALL BE PROVIDED DURING HOT-WORK ACTIVITIES AND SHALL CONTINUE FOR A MINIMUM OF 30 MINUTES AFTER THE CONCLUSION OF THE WORK.
12. IF SITE SURVEY OR EARTH MOVING WORK RESULTS IN THE DISCOVERY OF HAZARDOUS MATERIALS IN CONTAINERS, OR WHAT APPEARS TO BE HAZARDOUS WASTES RELEASED INTO THE GROUND, THE CONTRACTOR OR APPLICANT SHALL IMMEDIATELY REPORT THE FINDING TO THE ROSEVILLE FIRE DEPARTMENT VIA PHONE AT (916) 774-5821. ALL SUSPECTED AREAS SHALL BE MARKED OFF WITH APPROVED SIGNAGE OR CAUTION TAPE UNTIL SUCH TIME THAT A REPRESENTATIVE FROM THE FIRE DEPARTMENT DETERMINES WHETHER THE RELEASE IS REPORTABLE OR NOT AND IF SITE REMEDIATION IS REQUIRED.
13. FIRE SAFETY DURING CONSTRUCTION SHALL COMPLY WITH ARTICLE 87 OF THE CALIFORNIA FIRE CODE AS AMENDED BY THE CITY OF ROSEVILLE.
14. NOT USED
15. NOT USED
16. PORTABLE FIRE EXTINGUISHERS SHALL BE INSTALLED IN OCCUPANCIES AND LOCATIONS AS SET FORTH IN THE CALIFORNIA FIRE CODE AND AS REQUIRED BY THE CHIEF. PROVIDE A MINIMUM OF ONE (1) PORTABLE FIRE EXTINGUISHER WITHIN EACH TENANT SPACE. THE MAXIMUM TRAVEL DISTANCE TO THE FIRE EXTINGUISHER SHALL NOT EXCEED 75- FEET. THE MINIMUM RATING CLASSIFICATION FOR THE EXTINGUISHER SHALL BE NOT LESS THAN 2A-10B:C. THE MAXIMUM TRAVEL DISTANCE FROM ANY POINT IN A LIGHT HAZARD AREA OF CLASS A HAZARDS SHALL NOT BE MORE THAN 75 FEET FROM A CLASS 2A-10B:C FIRE EXTINGUISHER AND ONE EXTINGUISHER SHALL BE PROVIDED FOR EACH 6,000 SQUARE FEET. THE MAXIMUM TRAVEL DISTANCE FROM ANY POINT IN AN ORDINARY HAZARD OF CLASS A HAZARDS AREA SHALL NOT BE MORE THAN 75 FEET AND ONE EXTINGUISHER SHALL BE PROVIDED FOR EACH 3,000 SQUARE FEET. THE MAXIMUM TRAVEL DISTANCE TO CLASS B EXTINGUISHERS IS EITHER 30 FEET OR 50 FEET DEPENDING UPON THE SIZE OF THE EXTINGUISHER AND THE CLASSIFICATION OF THE HAZARD. REFER TO UFC STANDARD NO. 10-1 FOR COMPLETE REQUIREMENTS. ALL PORTABLE FIRE EXTINGUISHERS SHALL HAVE A SERVICE TAG AFFIXED TO THEM SHOWING THAT THE EXTINGUISHER HAS BEEN SERVICED BY A CALIFORNIA STATE LICENSED FIRE EXTINGUISHER CONCERN. ALL FIRE EXTINGUISHERS SHALL BE ATTACHED TO A BRACKET OR WITHIN AN APPROVED CABINET. MAXIMUM DISTANCE FROM THE FLOOR SHALL NOT EXCEED 54-INCHES. SIGNAGE SHALL BE POSTED ABOVE THE EXTINGUISHER AND SHALL READ FIRE EXTINGUISHER.

NO.	REVISIONS	BY	DATE

BENCH MARK  
ELEVATION \_\_\_\_\_ DATUM \_\_\_\_\_  
DESCRIPTION \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CJM  
DRAWN BY: CJM  
CHECKED BY: \_\_\_\_\_ CHECKED  
SCALE: NONE  
DATE: 10/06/06  
PROJECT NO: 1511331



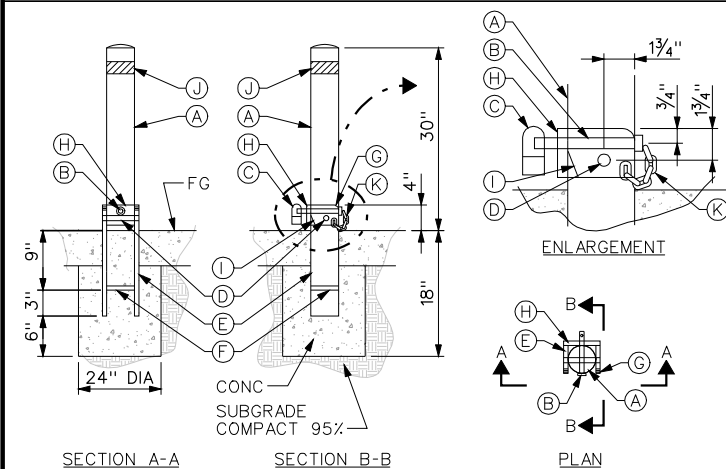
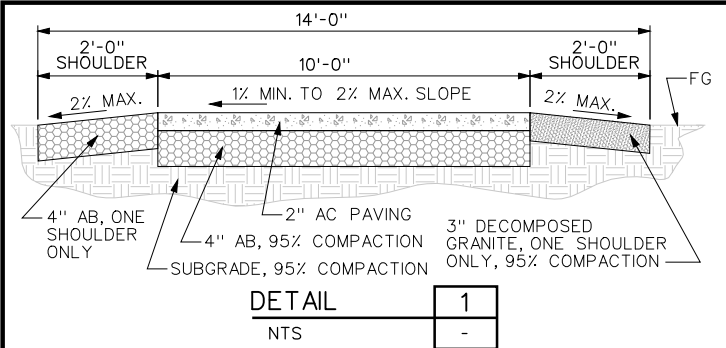
CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING

CITY OF ROSEVILLE  
GENERAL NOTES

GC-02



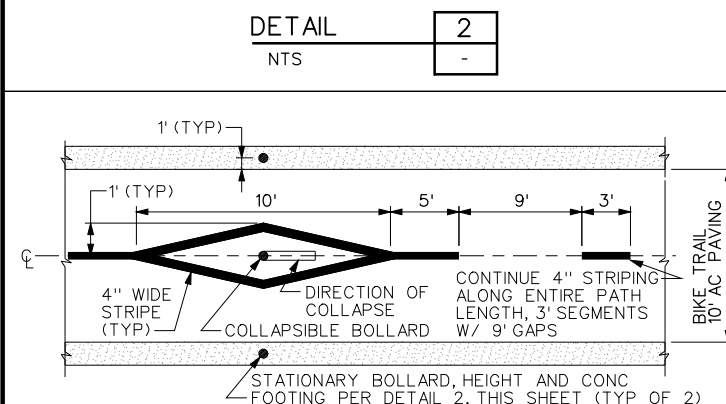


LEGEND:

- A.  $3\frac{1}{2}$ " O.D.  $\frac{1}{4}$ " WALL STEEL PIPE W/ CAP WELDED ON TOP,  $\frac{7}{8}$ " HOLES FOR LOCK PIN AND  $\frac{3}{4}$ " HOLES FOR SWIVEL ROD. DEBURR ALL EDGES.
- B.  $\frac{3}{4}$ " DIA. x5" LOCK PIN W/ FLAT WASHER WELDED TO END AND  $\frac{5}{8}$ " HOLE DRILLED  $\frac{1}{4}$ " FROM OPPOSITE END.
- C. PADLOCK PROVIDED BY CITY.
- D.  $5\frac{1}{8}$ " DIA. STEEL SWIVEL ROD WELDED TO SIDE PLATES.
- E.  $3\frac{1}{2}$ "x16x4" STEEL BASE PLATE W/ 1" RADIUS CORNERS. DEBURR ALL EDGES.
- F.  $\frac{3}{8}$ " STEEL BRACE FILLET WELDED TO BASE PLATES, BOTH SIDES.
- G. 1" RADIUS CORNERS, TYP.
- H.  $4\frac{1}{2}$ "x $3\frac{7}{8}$ " STEEL BACK PLATE WELDED TO BASE PLATE.
- I. FISH MOUTH GRIND AT BOTTOM BACK CORNER OF POST.
- J. 2" WHITE REFLECTIVE TAPE.
- K. 12" L  $\frac{3}{4}$ " CHAIN, WELDED TO PIN AND BASE PLATE.

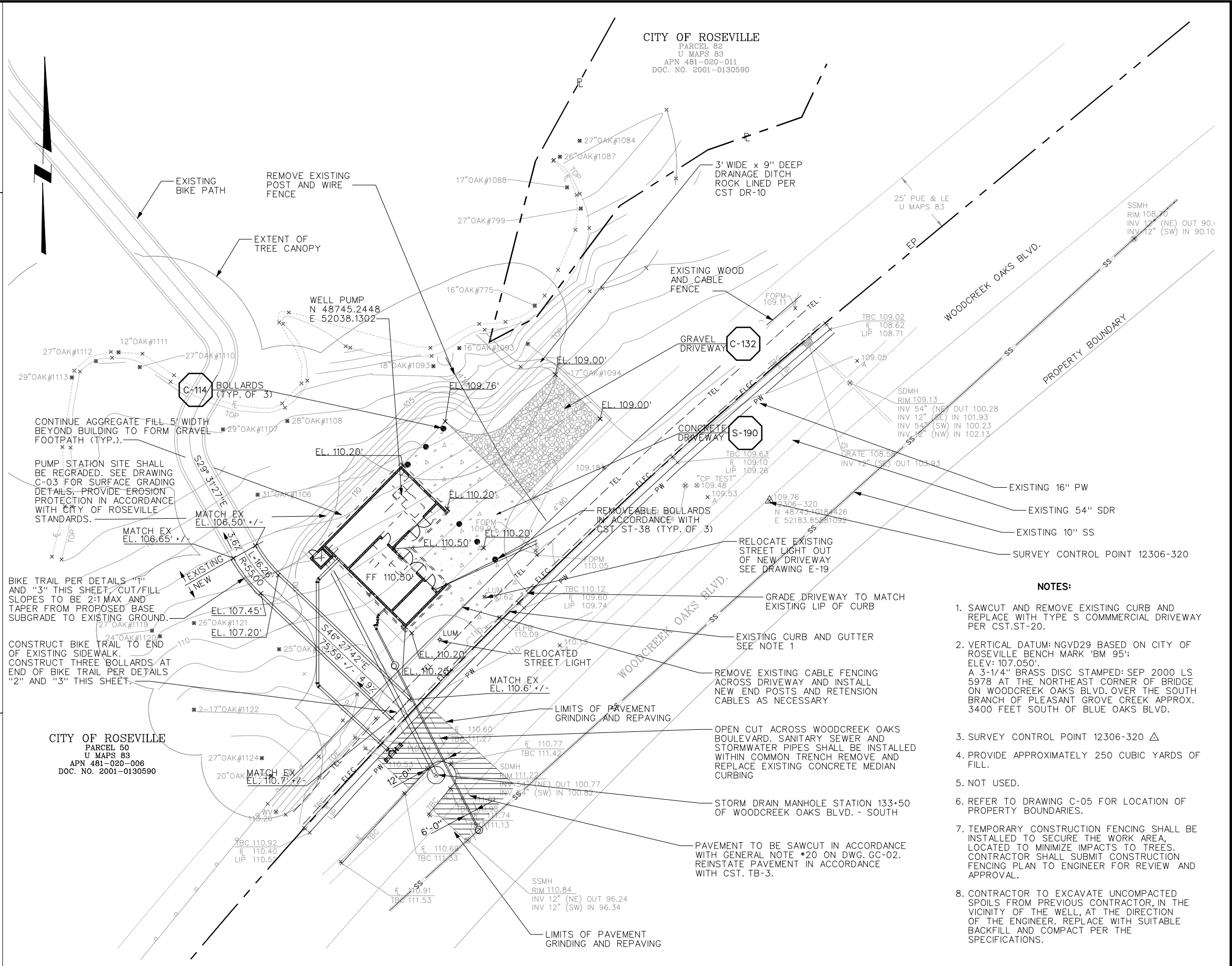
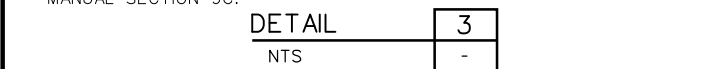
NOTES:

1. ALL PIPE SHALL BE BLACK STEEL PIPE.
2. ALL JOINTS SHALL BE WELDED IN ACCORDANCE W/ CA STATE STANDARD SPECIFICATIONS FOR WELDING STRUCTION STEEL, AND GROUND SMOOTH.
3. ALL PARTS SHALL BE PAINTED WITH TWO COATS ZINC CHROMATE PRIMER AND TWO COATS EXTERIOR ENAMEL. COLOR: YELLOW PER CITY OF ROSEVILLE STANDARD.
4. BOLLARD SHALL BE INSTALLED SO AS TO LAY FLAT WHEN FOLDED.



NOTES:

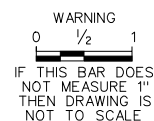
1. STRIPING SHALL CONFORM WITH CALTRANS HIGHWAY DESIGN MANUAL, SECTIONS 1003.1.15, 1003.16, 1004-2, AND CITY OF ROSEVILLE STANDARDS.
2. STRIPING TO BE YELLOW AND SHALL BE RETROREFLECTIVE.
3. INSTALL RETROREFLECTIVE MARKERS ON ALL BOLLARDS PER MUTCD MANUAL SECTION 9C.



NOTES:

1. SAWCUT AND REMOVE EXISTING CURB AND REPLACE WITH TYPE S COMMERCIAL DRIVEWAY PER CST.ST-20.
2. VERTICAL DATUM: NGVD29 BASED ON CITY OF ROSEVILLE BENCH MARK 'BM 95'; ELEV: 107.050'.  
A 3-1/4" BRASS DISC STAMPED: SEP 2000 LS 5978 AT THE NORTHEAST CORNER OF BRIDGE ON WOODCREEK OAKS BLVD. OVER THE SOUTH BRANCH OF PLEASANT GROVE CREEK APPROX. 3400 FEET SOUTH OF BLUE OAKS BLVD.
3. SURVEY CONTROL POINT 12306-320  $\Delta$
4. PROVIDE APPROXIMATELY 250 CUBIC YARDS OF FILL.
5. NOT USED.
6. REFER TO DRAWING C-05 FOR LOCATION OF PROPERTY BOUNDARIES.
7. TEMPORARY CONSTRUCTION FENCING SHALL BE INSTALLED TO SECURE THE WORK AREA, LOCATED TO MINIMIZE IMPACTS TO TREES. CONTRACTOR SHALL SUBMIT CONSTRUCTION FENCING PLAN TO ENGINEER FOR REVIEW AND APPROVAL.
8. CONTRACTOR TO EXCAVATE UNCOMPACTED SPOILS FROM PREVIOUS CONTRACTOR, IN THE VICINITY OF THE WELL, AT THE DIRECTION OF THE ENGINEER. REPLACE WITH SUITABLE BACKFILL AND COMPACT PER THE SPECIFICATIONS.

NO.	REVISIONS	BY	DATE



	CJM
DRAWN BY:	CJM
CHECKED BY:	CHECKED
SCALE:	1" = 20'
DATE:	10/06/06
PROJECT NO:	1511331

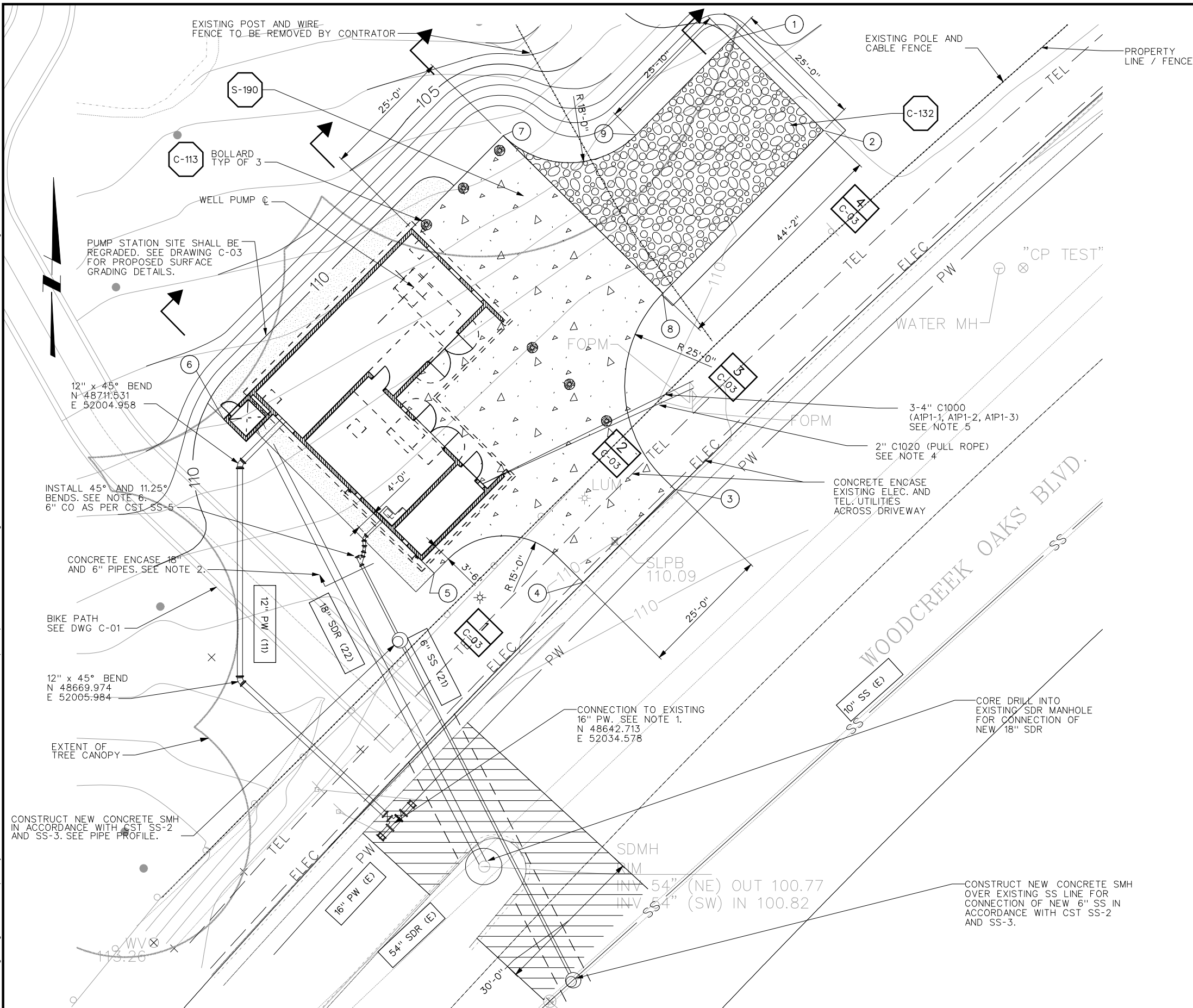


CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING

CIVIL SITE PLAN

C-01



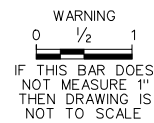
**NOTES:**

1. CONNECTION TO EXISTING 16" CLMS PIPE AND INSTALLATION OF NEW 12" AND 16" VALVES TO BE UNDERTAKEN BY CITY OF ROSEVILLE. CONTRACTOR TO EXCAVATE AND EXPOSE MAIN PROVIDE TRAFFIC CONTROL, ETC. AND BACKFILL TRENCH AT COMPLETION. CONTRACTOR RESPONSIBLE FOR CONNECTING NEW 12" MAIN FROM PUMP STATION BUILDING TO 12" VALVE ON 16" MAIN. 12" AND 16" VALVES SHALL BE SUPPLIED BY THE CITY OF ROSEVILLE.
2. ALL BURIED SANITARY AND STORM DRAIN PIPING WITHIN 50FT RADIUS OF WELL SHALL BE CONCRETE ENCASED, 6" THICKNESS WITH #4 TIES AT 12" CENTERS, AND 4-\*4 LONGITUDINAL BARS PROVIDED. SANITARY SEWER PIPE MATERIAL WITHIN 50FT RADIUS (STARTING AT THE OUTLET OF THE TWO WAY CLEANOUT) SHALL BE DUCTILE IRON IN ACCORDANCE WITH SECTION 91-9.J OF CITY OF ROSEVILLE'S CONSTRUCTION STANDARDS.
3. CONTRACTOR SHALL PROVIDE CITY 45 DAYS NOTICE PRIOR TO SEWER CONSTRUCTION TO ALLOW FOR THE CITY TO TV AND PRESSURE TEST EXISTING SERVICE MAIN. CONTRACTOR WILL BE RESPONSIBLE TO REPAIR ANY DAMAGES TO EXISTING SEWER.
4. ROUTE 1-2" PVC CONDUIT TO TELEPHONE SERVICE POINT. CONTRACTOR IS RESPONSIBLE TO CO-ORDINATE WITH THE TELEPHONE UTILITY FOR SERVICE POINT LOCATION, CONDUIT AND TRENCH REQUIREMENTS, MATERIALS, AND SCHEDULE. PROVIDE PULL ROPE IN CONDUIT, FOR FUTURE ONLY.
5. ROUTE 3-4" PVC CONDUITS TO THE ROSEVILLE ELECTRIC SERVICE POINT. SERVICE POINT TO BE COORDINATED WITH ROSEVILLE ELECTRIC DEPARTMENT DISPATCH, (916) 774 5620. PROVIDE AND INSTALL SUBSTRUCTURES AS REQUIRED BY THE UTILITY, INCLUDING TRANSFORMER CONCRETE SLAB, SUB-BASE AND A 4" PRIMARY CONDUIT-ROUTED TO EXISTING CONDUIT STUB. REFER TO DRAWING E-19 FOR SERVICE POINT LOCATION. INSTALL CONDUITS PER DETAIL E-104. CONTRACTOR RESPONSIBLE FOR COMPLETE SERVICE INSTALLATION.
6. INSTALL 45 DEGREE AND 11.25 DEGREE BENDS WITH JOINT DEFLECTION OF PIPE AS REQUIRED. JOINT DEFLECTION SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
7. SEE SHEET C-04 FOR PIPING PROFILES
8. 12" POTABLE WATER (PW) LINE SHALL BE RESTRAINED JOINT, DUCTILE IRON PIPE, POLYETHYLENE ENCASED.

**HORIZONTAL CONTROL WORKPOINTS**

REF POINT	CO-ORDINATES	REF POINT	CO-ORDINATES
①	N 48793.010 E 52099.036	⑥	N 48720.125 E 52001.818
②	N 48775.437 E 52116.823	⑦	N 48774.453 E 52055.437
③	N 48706.656 E 52088.417	⑧	N 48744.249 E 52086.040
④	N 48688.865 E 52070.745	⑨	N 48774.622 E 52080.891
⑤	N 48690.578 E 52042.203		

1	CHANGE NOTE 1; DELETE NOTE 9 (ADD. 4)	EAG	4/07
NO.	REVISIONS	BY	DATE



DRAWN BY: CJM  
CHECKED BY: CHECKED  
SCALE: 1" = 10'  
DATE: 10/06/06  
PROJECT NO: 1511331



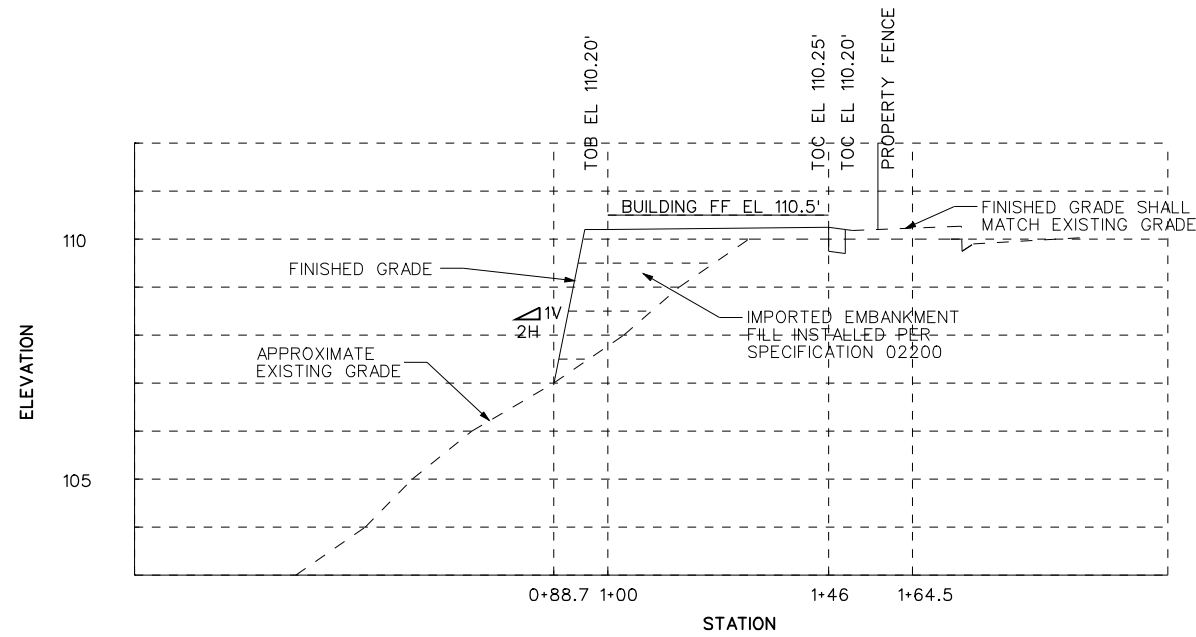
**CITY OF ROSEVILLE**  
**ENVIRONMENTAL UTILITIES DEPARTMENT**  
**WOODCREEK NORTH PUMP STATION**  
**8301 WOODCREEK OAKS BLVD. ROSEVILLE**

**CONFORMED DRAWING**

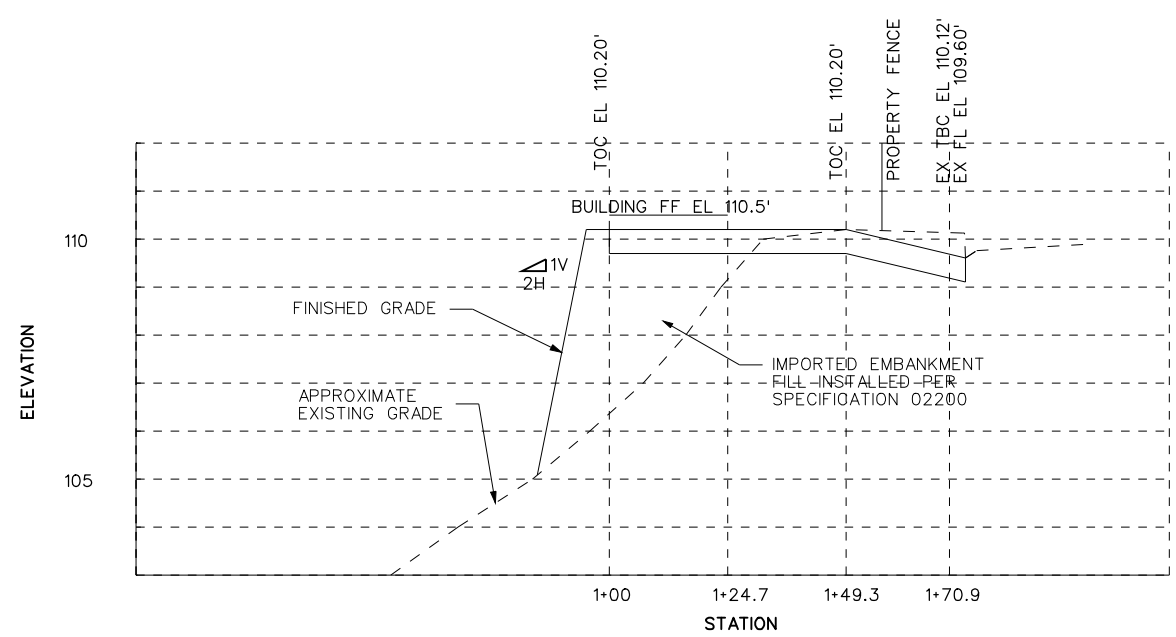
**CIVIL**  
**UTILITIES PLAN**

**C-02**

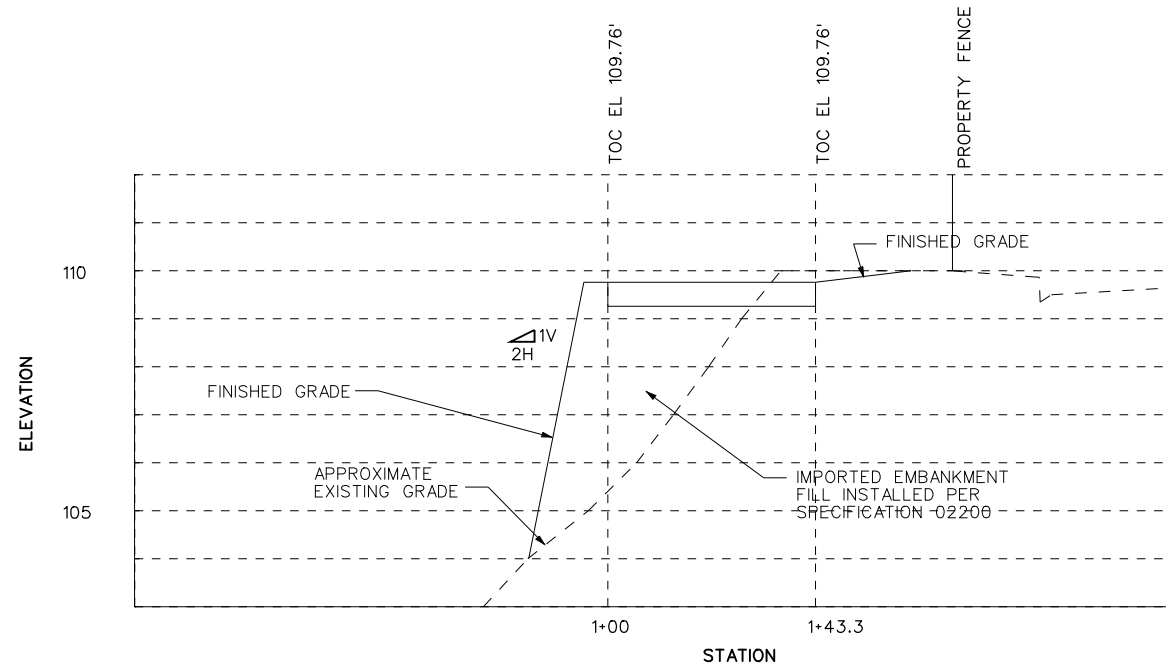




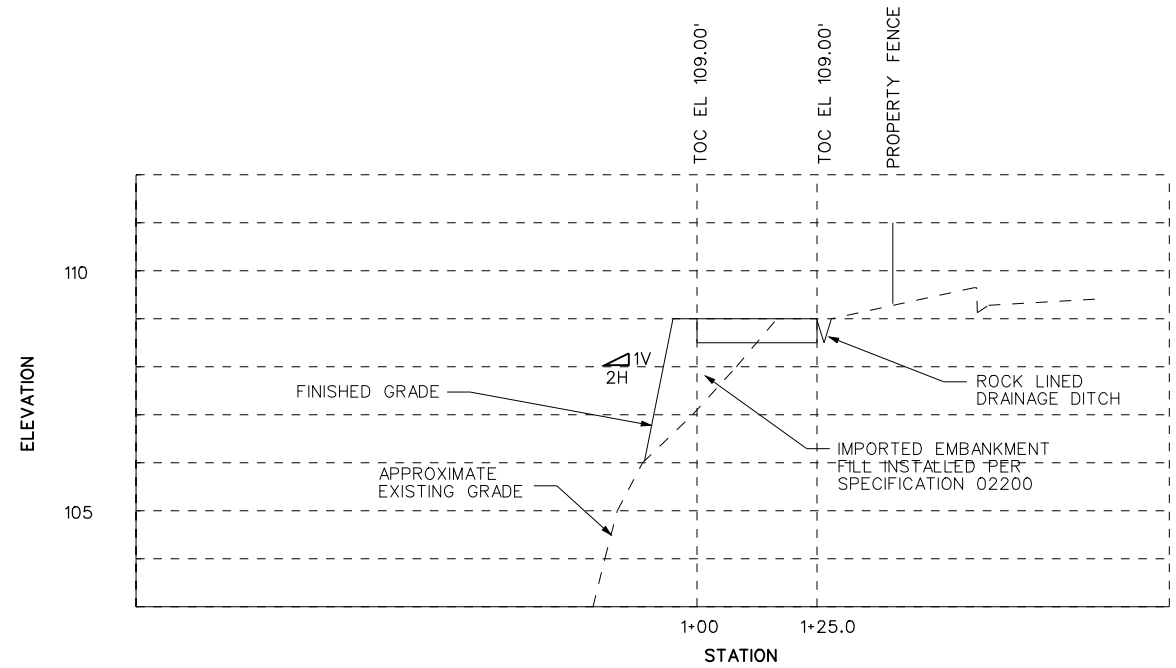
PROFILE 1 - SOUTH WEST WALL



PROFILE 2 - NORTH EAST WALL



PROFILE 3 - CONCRETE DRIVEWAY



PROFILE 4 - EASTERN EDGE OF DRIVEWAY

NO.	REVISIONS	BY	DATE

BENCH MARK	CJM
ELEVATION	CJM
DESCRIPTION	CHECKED

DRAWN BY:	CJM
CHECKED BY:	CHECKED
SCALE:	1" = 20'
DATE:	10/06/06
PROJECT NO:	1511331



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

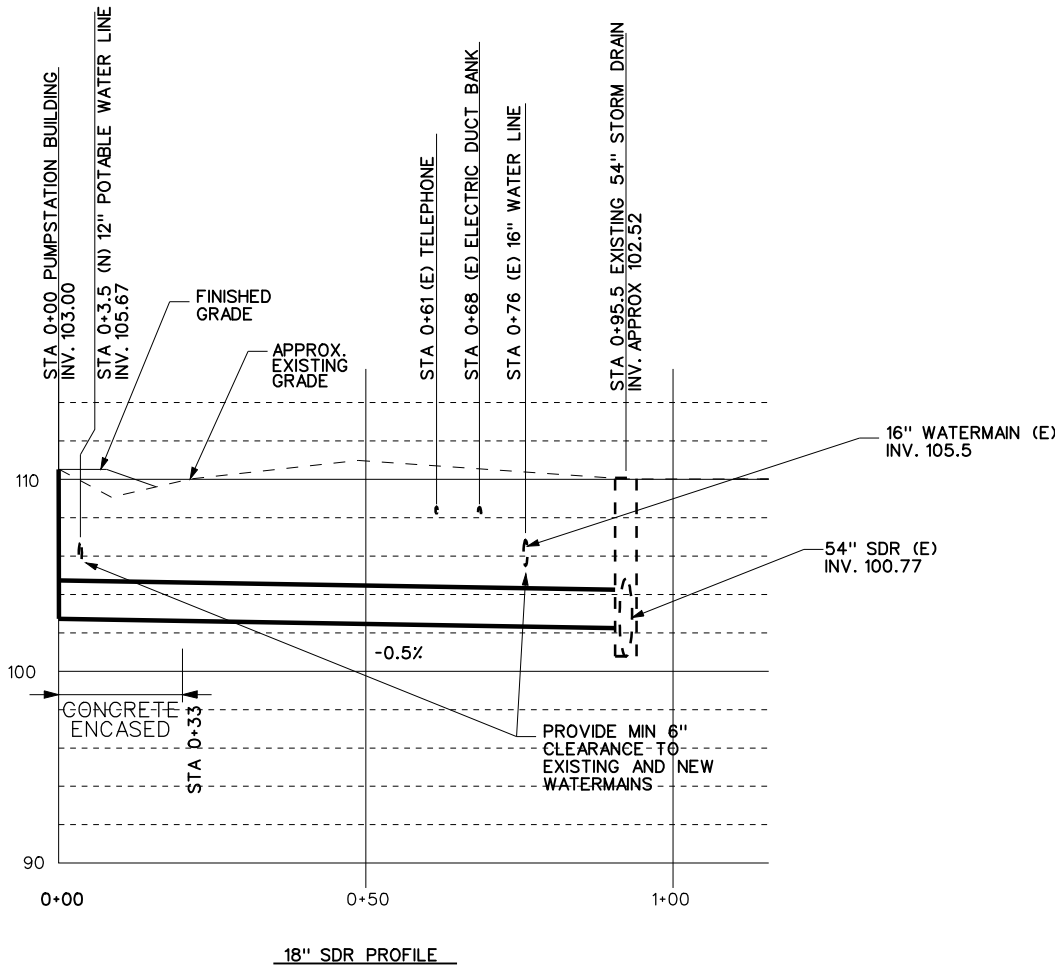
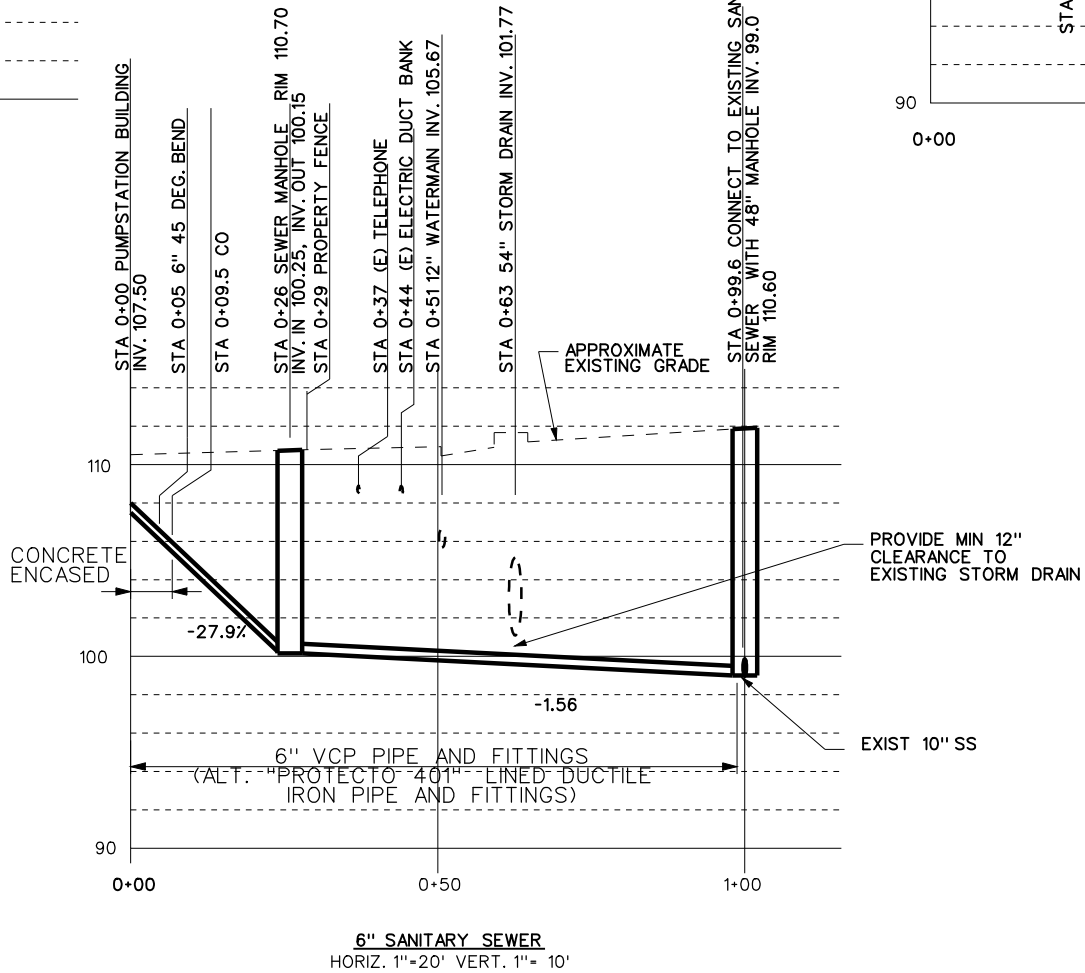
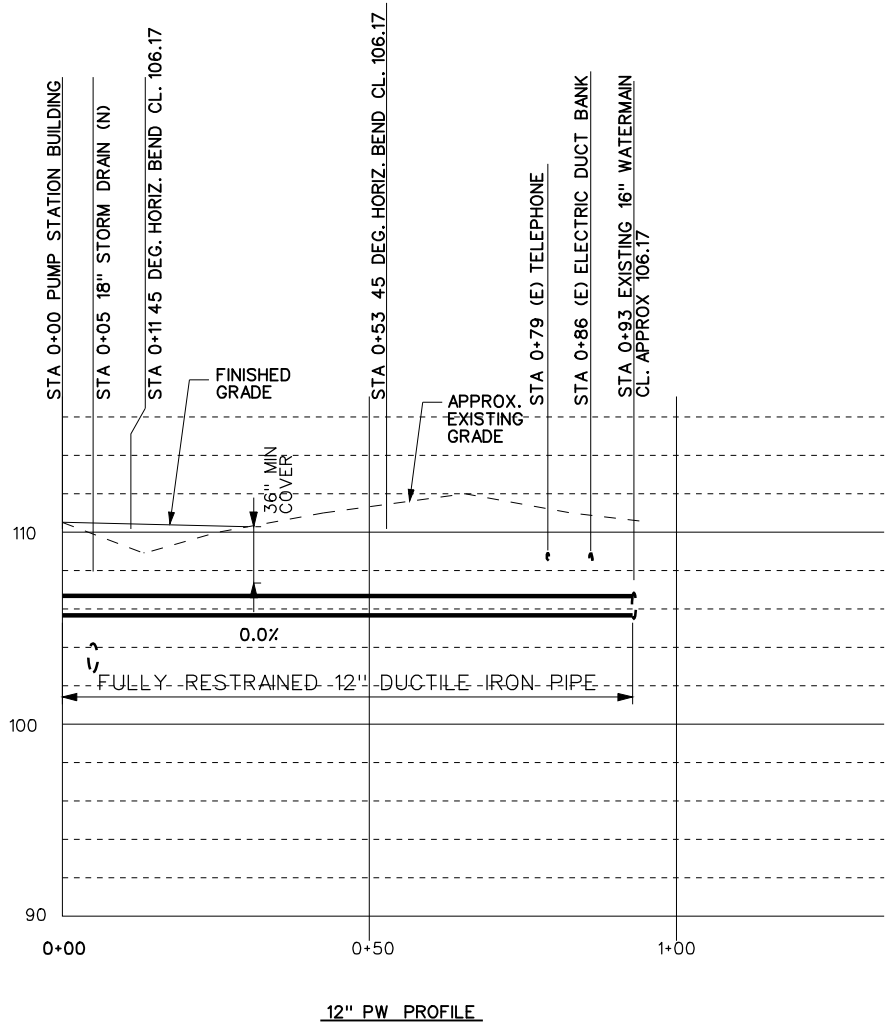
CONFORMED DRAWING
CIVIL SITE GRADING PROFILES

C-03

File: C:\Documents and Settings\egosse\My Documents\Project Transfer\Files\Woodcreek Transfer\WDCK\_Export\Import\WDCRK\_C04\_CNF.dgn

User: egosse

Plot Date: 13-JUN-2007 15:23



1	CHANGE 24" SDR PROFILE TITLE TO 18" (ADD. 4)	EAG	4/07
NO.	REVISIONS	BY	DATE

BENCH MARK
ELEVATION _____ DATUM _____
DESCRIPTION _____
_____
_____
_____

DRAWN BY: CJM  
CHECKED BY: CHECKED  
SCALE: AS SHOWN  
DATE: 10/06/06  
PROJECT NO: 1511331

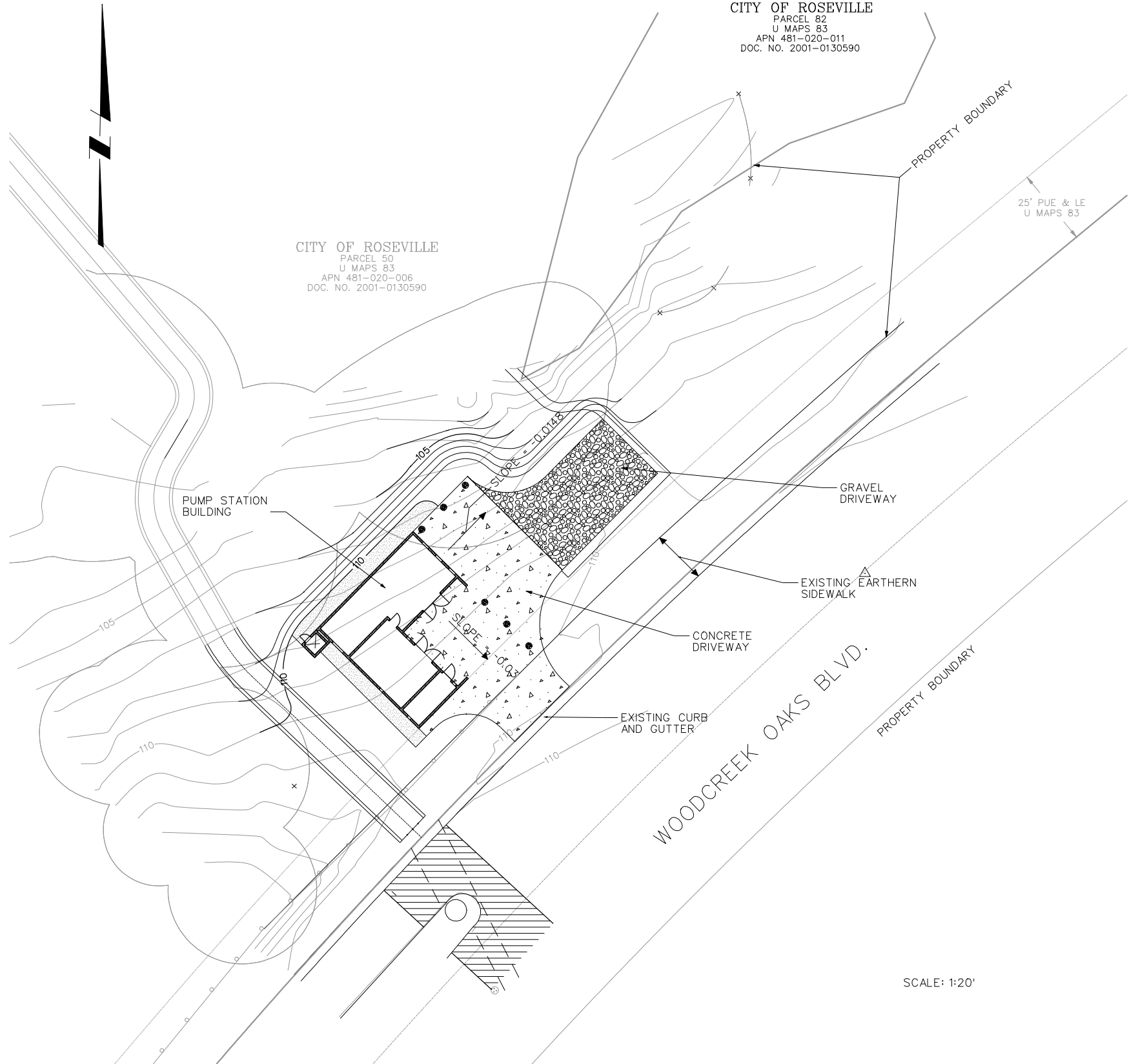
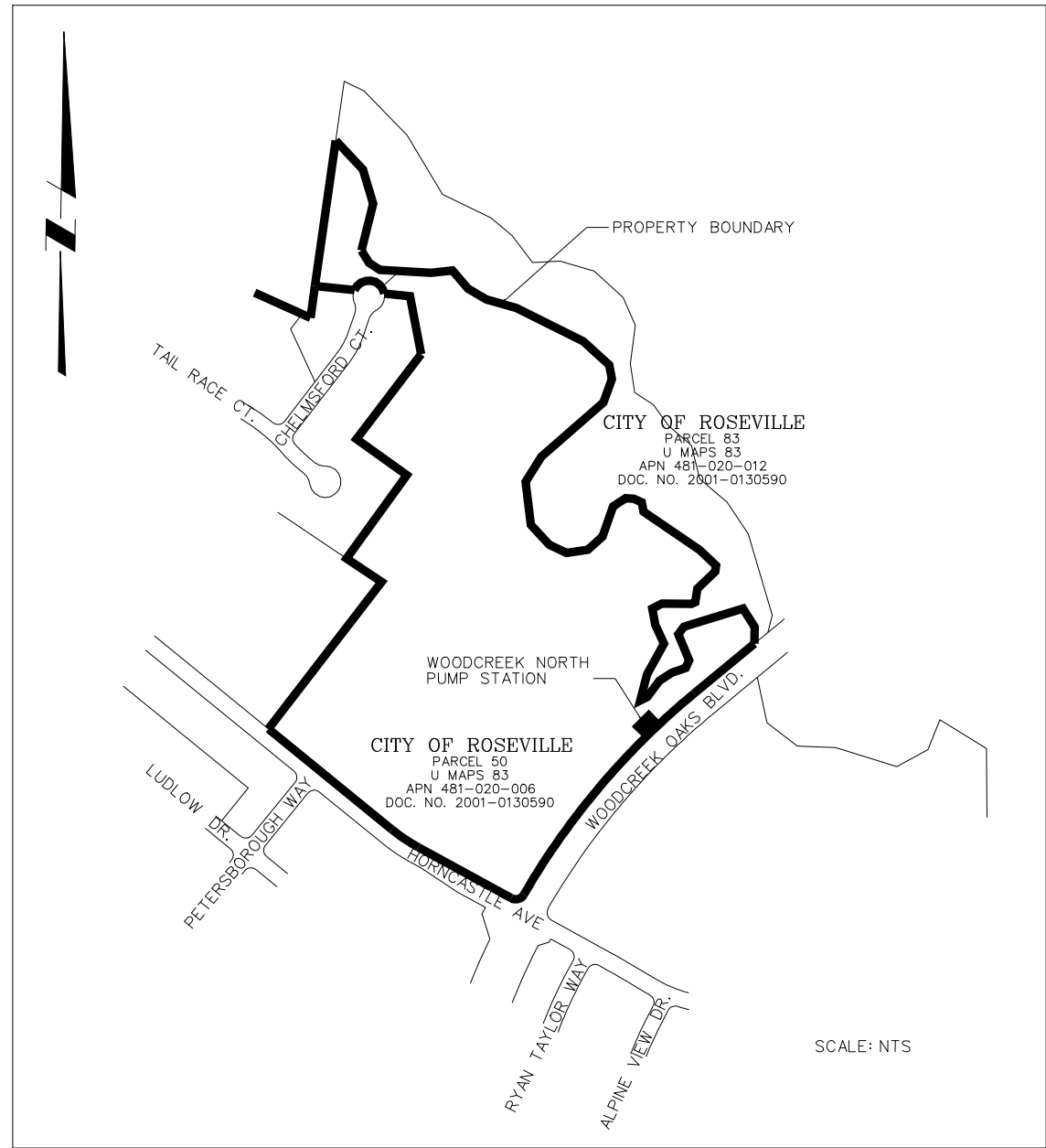


CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING

CIVIL  
PIPE GRADING PROFILES

C-04



NO.	REVISIONS	BY	DATE

BENCH MARK	C.M.
ELEVATION	E.L.
DESCRIPTION	

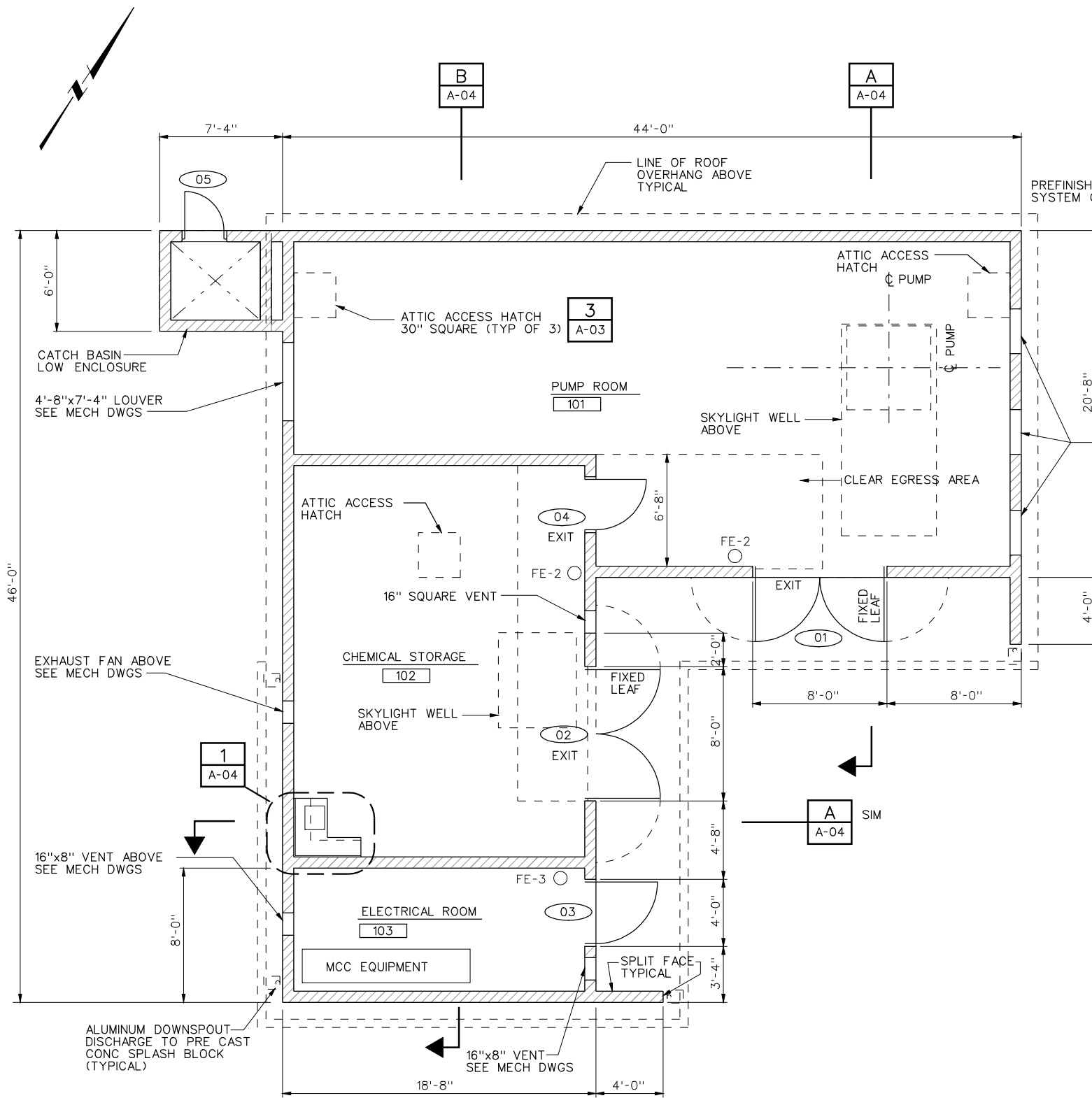
DRAWN BY:	C.M.
CHECKED BY:	CHECKED
SCALE:	AS SHOWN
DATE:	10/06/06
PROJECT NO:	1511331



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING  
SITE ACCESSIBILITY PLAN

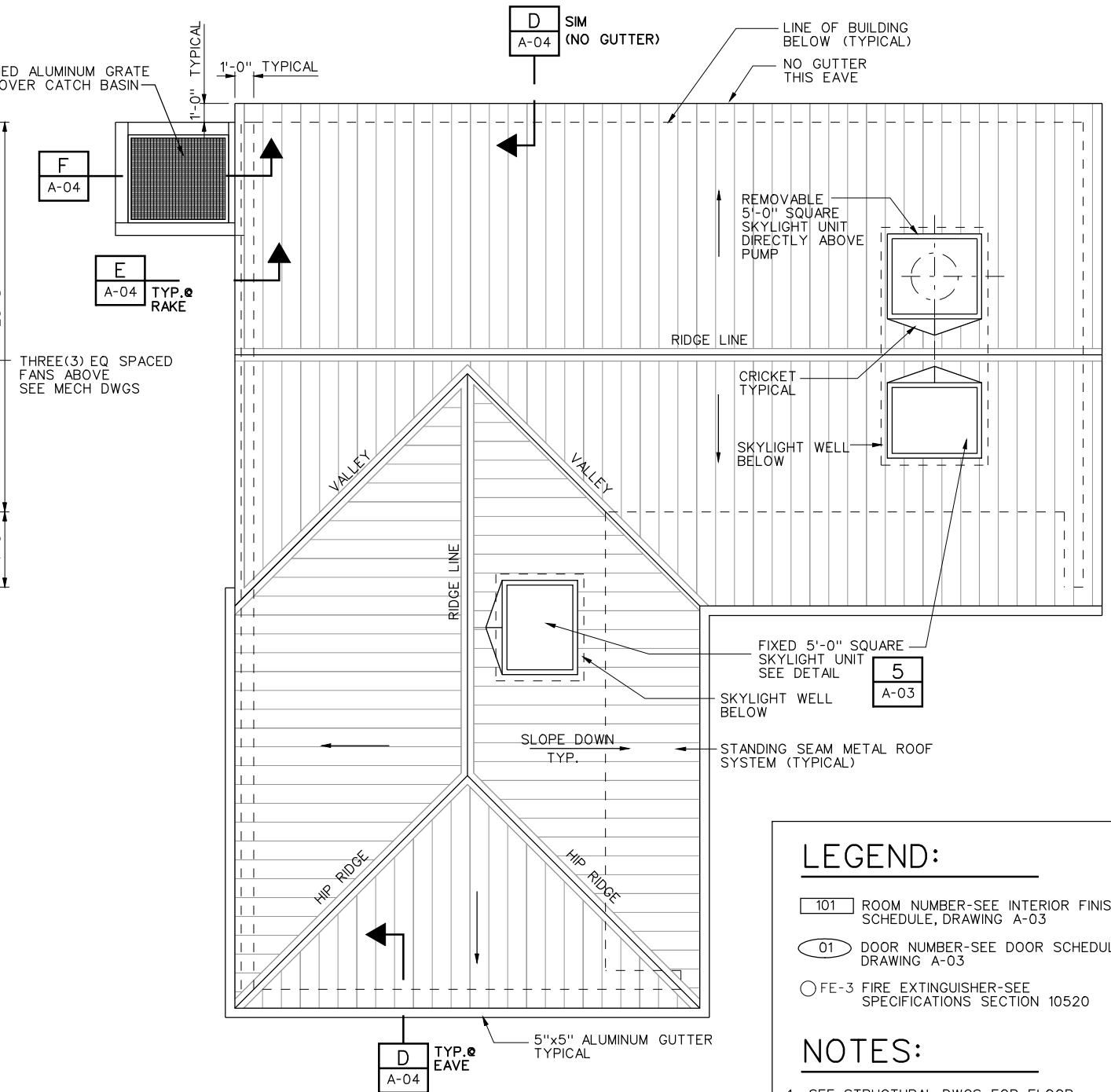
C-05



FLOOR PLAN

ATTIC VENTILATION CALCULATIONS:  
ROOF ABOVE PUMP ROOM:  
AREA = 1085 SF  
GROSS VENTILATION AREA:  
GABLE VENTS = 10 SF GROSS  
SOFFIT VENTS = 17 SF GROSS  
NET VENTILATION AREA = 27 SFx50% = 13.5 SF NET  
NET VENTILATION AREA REQUIRED: 1085/150 = 7.23 SF

ROOF ABOVE CHEMICAL STORAGE & ELECTRICAL ROOMS:  
AREA = 485 SF  
GROSS VENTILATION AREA:  
SOFFIT VENTS = 11 SF GROSS  
NET VENTILATION AREA = 11 SFx50% = 5.5 SF NET  
NET VENTILATION AREA REQUIRED: 485/150 = 3.23 SF



ROOF PLAN

LEGEND:

- 101 ROOM NUMBER-SEE INTERIOR FINISH SCHEDULE, DRAWING A-03
- 01 DOOR NUMBER-SEE DOOR SCHEDULE DRAWING A-03
- FE-3 FIRE EXTINGUISHER-SEE SPECIFICATIONS SECTION 10520

NOTES:

- SEE STRUCTURAL DWGS FOR FLOOR DRAINS & SLOPES

NO.	REVISIONS	BY	DATE

BENCH MARK	
ELEVATION	DATUM
DESCRIPTION	

DRAWN BY:	M. STEINER
CHECKED BY:	-
SCALE:	1/4"=1'-0"
DATE:	03/27/03
PROJECT NO:	1510948



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

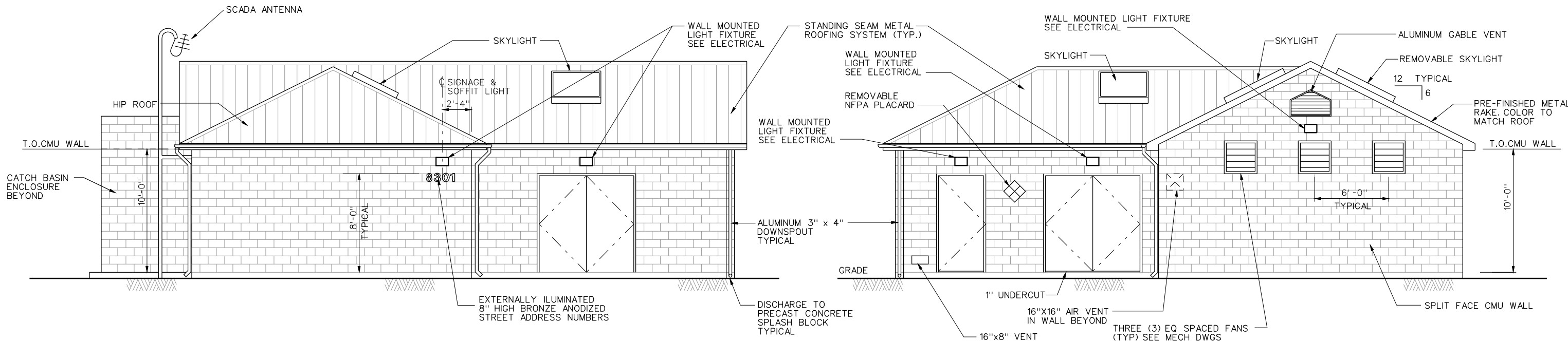
CONFORMED DRAWING

ARCHITECTURAL FLOOR PLAN  
AND ROOF PLAN

A-01

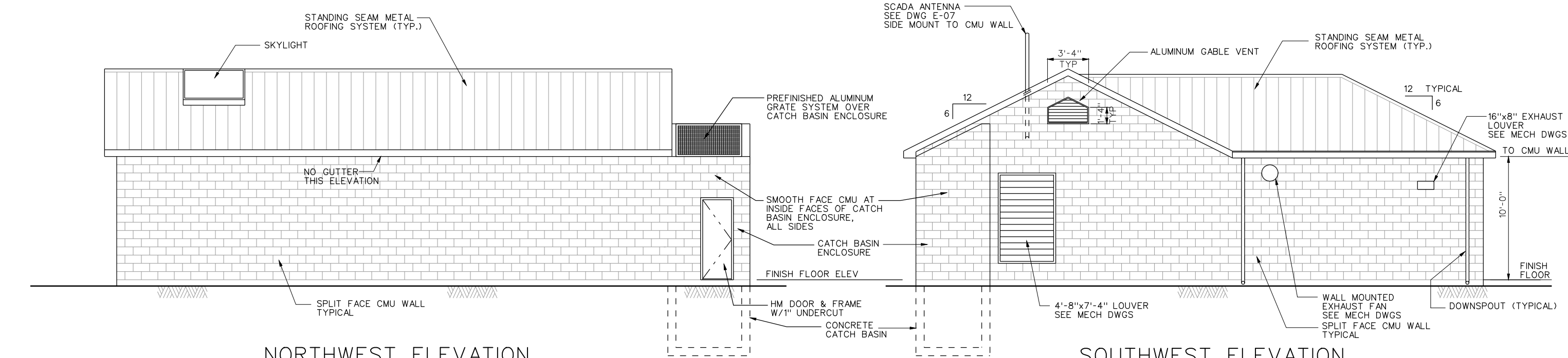
MATERIAL NOTES:

ROOF:	STANDING SEAM METAL ROOF, EVERGREEN.	GABLE VENTS:	PRE-FINISHED ALUMINUM
EXTERIOR WALLS:	SPLIT FACE CONCRETE MASONRY UNITS COLOR TO MATCH "BASALITE" #045	PLASTER SOFFIT:	INTEGRATED COLOR TO MATCH BLOCK WALL
DOOR FRAMES:	PAINT FINISH "BENGIMAN MOORE" BRIARWOOD, OR APPROVED EQUAL	DOOR EXTERIOR FACES:	PAINT DOOR & FRAME "BENGIMAN MOORE" BRIARWOOD, OR APPROVED EQUAL
RAKE & EAVE FLASHING:	KYNAR FINISH TO MATCH ROOF PANELS		
GUTTERS:	PRE-FINISHED ALUMINUM		
DOWNSPOUTS:	PRE-FINISHED ALUMINUM		



SOUTHEAST ELEVATION

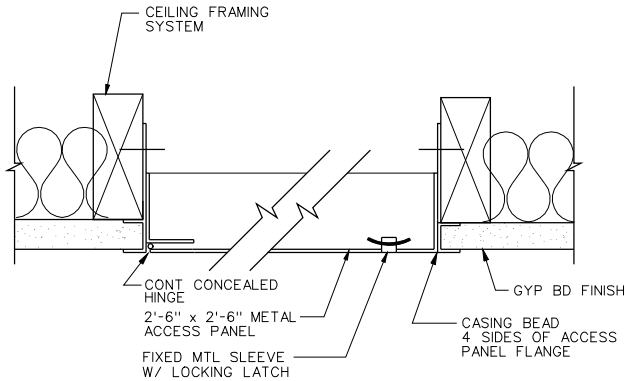
NORTHEAST ELEVATION



NORTHWEST ELEVATION

SOUTHWEST ELEVATION

<table><tr><td>NO.</td><td>REVISIONS</td><td>BY</td><td>DATE</td></tr><tr><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td></tr></table>			NO.	REVISIONS	BY	DATE																	<table><tr><td>BENCH MARK</td><td> </td></tr><tr><td>ELEVATION</td><td>DATUM</td></tr><tr><td>DESCRIPTION</td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></table>	BENCH MARK		ELEVATION	DATUM	DESCRIPTION								<table><tr><td>DRAWN BY:</td><td>M. STEINER</td></tr><tr><td>CHECKED BY:</td><td>-</td></tr><tr><td>SCALE:</td><td>1/4"=1'-0"</td></tr><tr><td>DATE:</td><td>03/27/03</td></tr><tr><td>PROJECT NO:</td><td>1510948</td></tr></table>	DRAWN BY:	M. STEINER	CHECKED BY:	-	SCALE:	1/4"=1'-0"	DATE:	03/27/03	PROJECT NO:	1510948	<div></div> <div></div> <div><p>CITY OF ROSEVILLE ENVIRONMENTAL UTILITIES DEPARTMENT WOODCREEK NORTH PUMP STATION 8301 WOODCREEK OAKS BLVD. ROSEVILLE</p></div>	<table><tr><td colspan="2">CONFORMED DRAWING</td></tr><tr><td colspan="2">EXTERIOR ELEVATIONS</td></tr></table>	CONFORMED DRAWING		EXTERIOR ELEVATIONS		A-02
NO.	REVISIONS	BY	DATE																																																		
BENCH MARK																																																					
ELEVATION	DATUM																																																				
DESCRIPTION																																																					
DRAWN BY:	M. STEINER																																																				
CHECKED BY:	-																																																				
SCALE:	1/4"=1'-0"																																																				
DATE:	03/27/03																																																				
PROJECT NO:	1510948																																																				
CONFORMED DRAWING																																																					
EXTERIOR ELEVATIONS																																																					

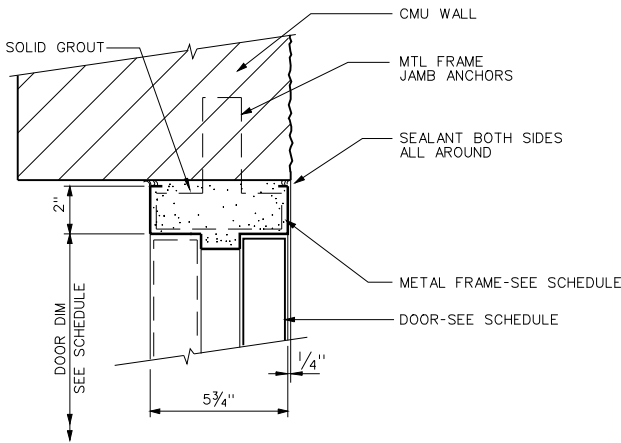


CEILING ACCESS PANEL DETAIL

3

NTS

A-1

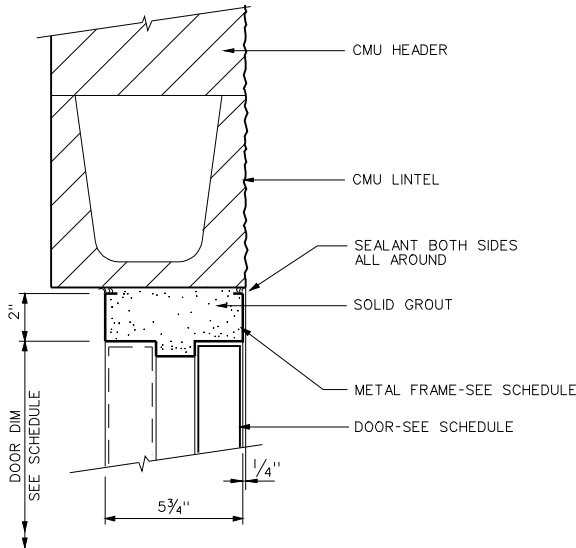


JAMB AT EXTERIOR CMU WALL

SCALE: 3"=1'-0"

2

-

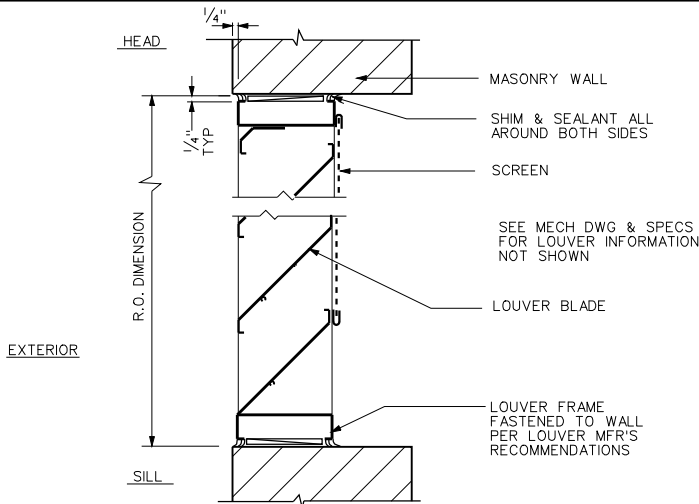


HEADER AT EXTERIOR CMU WALL

SCALE: 3"=1'-0"

4

-



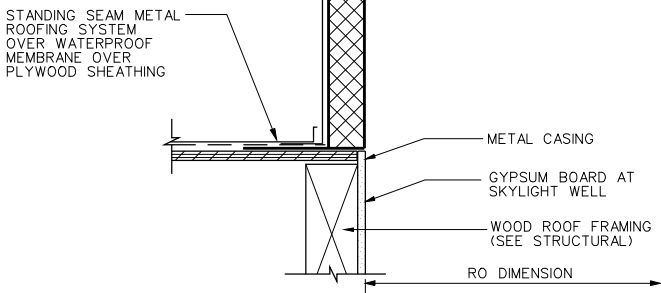
LOUVER AT MASONRY WALL

SCALE: 3" = 1'- 0"

1

(JAMB SIM.)

A-2



SKYLIGHT AT MTL DECK ROOF

SCALE: 3" = 1'- 0"

5

A-1

DOOR SCHEDULE

BLDG NAME	DOOR NO	DOOR SIZE		DOOR TYPE	DOOR			FRAME		DETAILS			HARD-WARE	FIRE LABEL	LOUVER SIZE	REMARKS
		WIDTH	HEIGHT		THCK	MAT	FIN SYS	MAT	FIN SYS	HEAD	JAMB	THRSH				
PUMP STATION	01	PR.3'-10"	7'-10"	B	1 3/4"	HM	PER SPEC	HM	PER SPEC	4/-	2/-	PER SPEC	HW-1	--	--	SEE NOTES 1 & 3
	02	PR.3'-10"	7'-10"	B	1 3/4"	HM	PER SPEC	HM	PER SPEC	4/-	2/-	PER SPEC	HW-1	--	--	1" DOOR UNDERCUT, SEE NOTES 1 & 3
	03	3'-8"	7'-10"	A	1 3/4"	HM	PER SPEC	HM	PER SPEC	4/-	2/-	PER SPEC	HW-2	--	--	1" DOOR UNDERCUT, SEE NOTES 1 & 3
	04	3'-0"	7'-2"	A	1 3/4"	HM	PER SPEC	HM	PER SPEC	2/-	2/-	PER SPEC	HW-3	--	--	SEE NOTE 2
	05	2'-4"	6'-6"	A	1 3/4"	HM	PER SPEC	HM	PER SPEC	4/-	2/-	PER SPEC	HW-2	--	--	1" UNDERCUT

DOOR NOTES:

- EACH GRADE-LEVEL EXTERIOR EXIT DOOR SHALL BE IDENTIFIED BY A TACTILE EXIT SIGN WITH THE WORD "EXIT", PER THE CBC, SECTION 1003.2.8.6.1. MOUNT THE SIGNAGE AT 60" ABOVE FINISH FLOOR ON THE LATCH SIDE OF THE DOOR. EXIT DOORS SHALL BE OPENABLE FROM THE INSIDE WITHOUT THE USE OF A KEY, SPECIAL KNOWLEDGE OR EFFORT, PER CBC, SECTION 1003.3.1.8.
- EXIT DOORS ARE TO BE OPENABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT PER CBC 1003.3.1.8
- SAME AS NOTE 1, EXCEPT THE SIGNAGE SHALL READ "EXIT ROUTE".
- FLOOR OR LANDING AT DOOR THRESHOLD SHALL NOT BE MORE THAN 1/2" LOWER THAN THE THRESHOLD, PER THE CBC, SECTION 1133B.2.4.1.

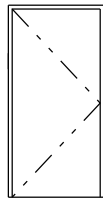
INTERIOR FINISH SCHEDULE

BLDG NAME	ROOM NO	ROOM DESCRIPTION	FLOOR	BASE	WAINSCOT	WALLS		CEILING			REMARKS
			MATERIAL			MATERIAL	PAINT SYS	MATERIAL	FIN SYS	CLG HT	
PUMP STATION	101	PUMP ROOM	CONC.	--	--	CMU	PER SPEC	G.B.	PER SPEC	10' ±	
	102	CHEM.STORAGE RM.	CONC.	--	--	CMU	PER SPEC	G.B.	PER SPEC	10' ±	
	103	ELECTRICAL RM.	CONC.	--	--	CMU	PER SPEC	G.B.	PER SPEC	10' ±	

FINISH SCHEDULE LEGEND:

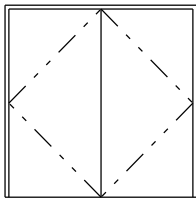
EXP. C. = EXPOSED CONSTRUCTION  
CONC. = EXPOSED CONCRETE W/ SEALER PER SPECIFICATIONS  
CMU = CONCRETE MASONRY UNITS  
G.B. = GYPSUM BOARD

DOOR TYPES



HM DOOR

A



HM DOOR

B

DOOR SCHEDULE ABBREVIATIONS

BLDG	BUILDING
(E)	EXISTING
FIN SYS	COATING OR PAINT SYSTEM
GL	GLASS
HM	HOLLOW METAL
HR	HOUR
SHT. MTL.	SHEET METAL
MAT	MATERIAL
MIN	MINUTE
SC	SOLID CORE
STL	STEEL
THK	THICKNESS
THRSH	THRESHOLD

BUILDING DATA

NEW PUMP STATION

BUILDING CODES: 1997 UNIFORM BUILDING CODE  
2001 CALIFORNIA BUILDING CODE  
2004 ELECTRICAL CODE  
2005 CALIFORNIA ENERGY CODE

TYPE OF CONSTRUCTION: V-N (CMU WALLS, WOOD ROOF TRUSSES)

OCCUPANCY GROUP: F-1

GROSS AREA: 1382 G.S.F.

BUILDING HEIGHT: 17'-6" FINISH GRADE TO ROOF RIDGE

OCCUPANT LOAD: 1382/300 OCC. LOAD FACTOR = 5 OCCUPANTS

FIRE PROTECTION: FIRE EXTINGUISHERS THROUGHOUT

BENCH MARK  
ELEVATION \_\_\_\_\_ DATUM \_\_\_\_\_  
DESCRIPTION \_\_\_\_\_

M. STEINER  
DRAWN BY: M. STEINER  
CHECKED BY: -  
SCALE: AS SHOWN  
DATE: 03/27/03  
PROJECT NO: 1510948

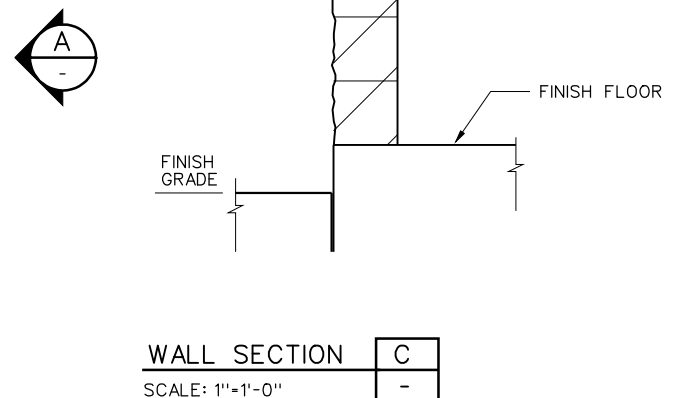
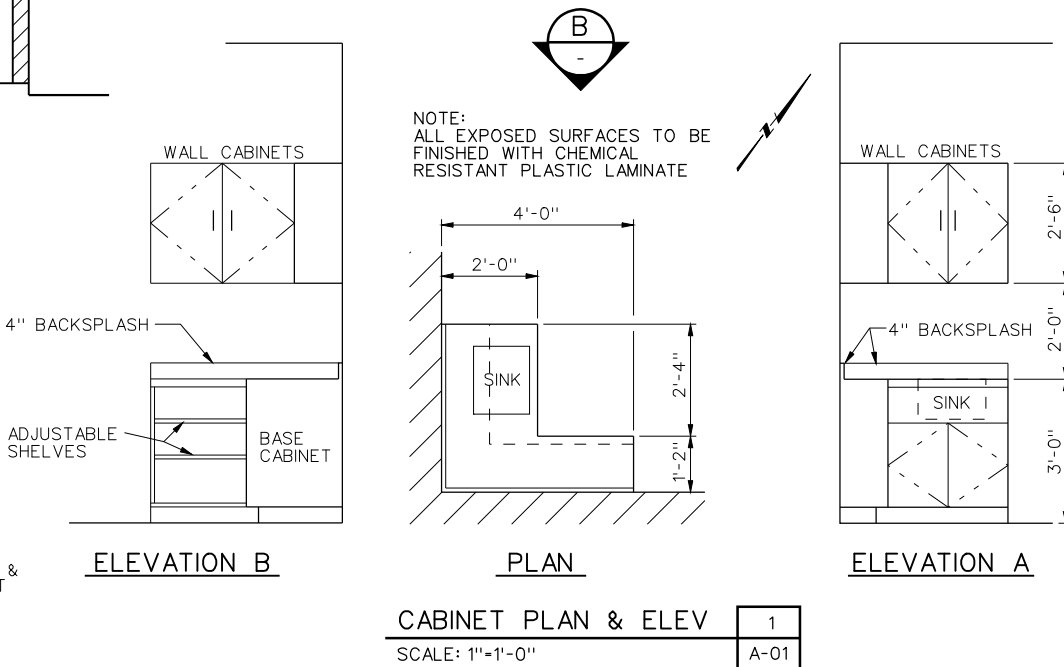
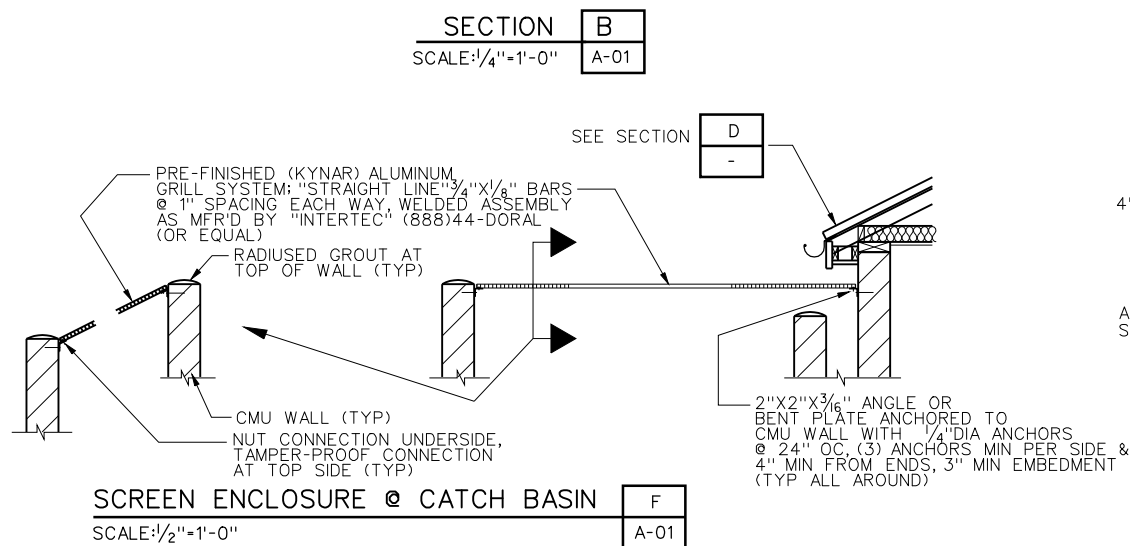
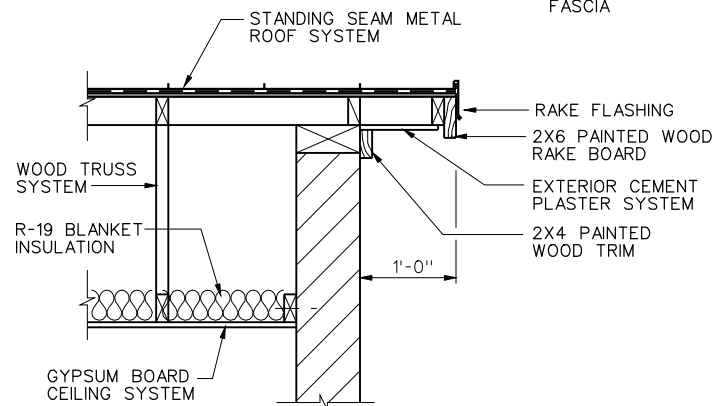
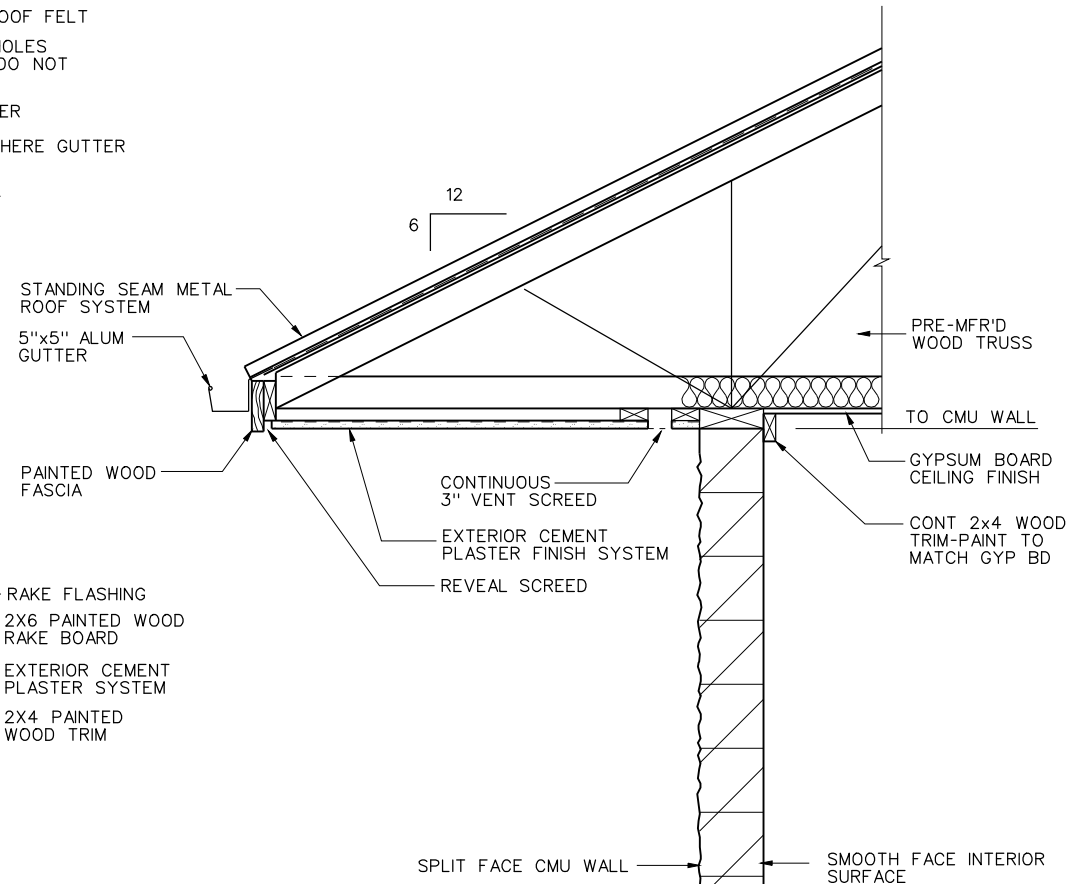
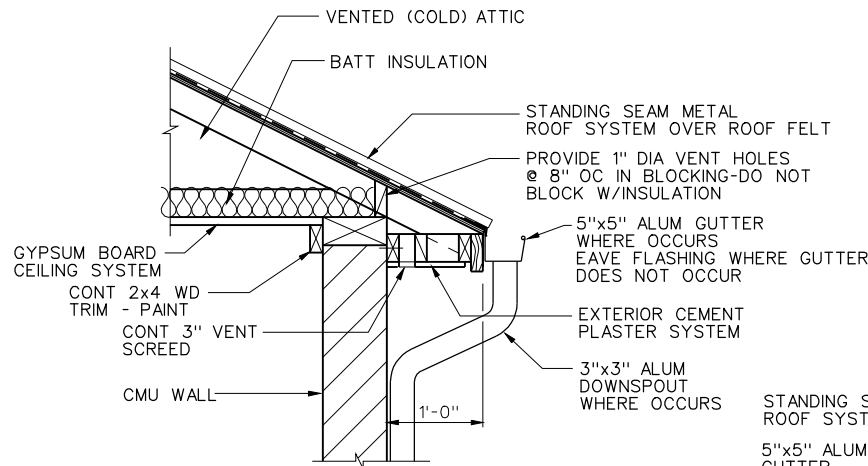
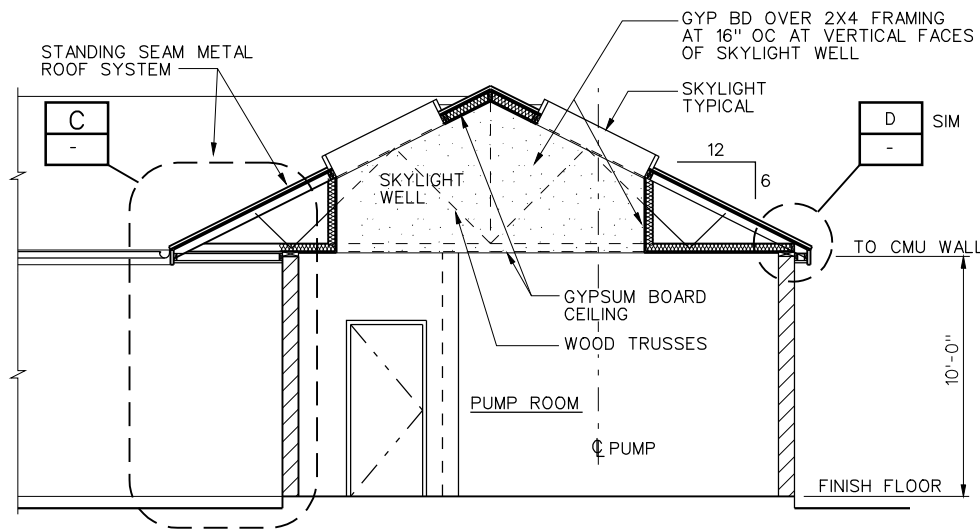


CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING

INTERIOR FINISH & DOOR SCHEDULES  
SECTIONS & DETAILS

A-03



1	SECTION "F" TITLE SPELLING CORRECTION	EAG	6/07
NO.	REVISIONS	BY	DATE

BENCH MARK	DATUM
ELEVATION	
DESCRIPTION	

M. STEINER
DRAWN BY: M. STEINER
CHECKED BY: -
SCALE: AS SHOWN
DATE: 03/27/03
PROJECT NO: 1510948

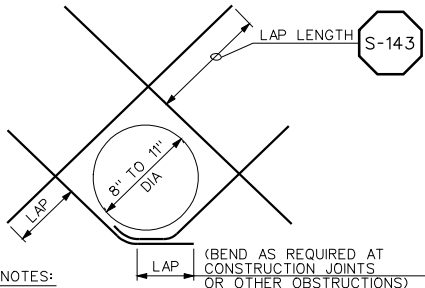


CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING
BUILDING & WALL SECTIONS

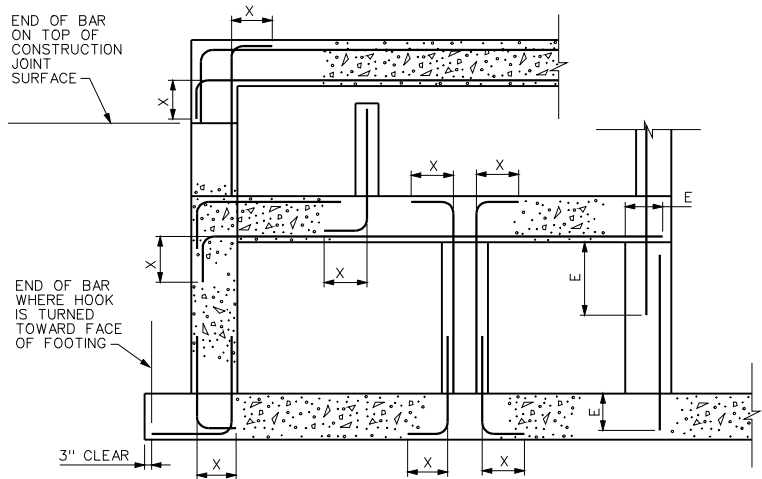






- NOTES:
- CUT NORMAL REINFORCEMENT 2" CLEAR OF OPENING
  - DIAGONAL BARS TO BE PLACED:
    - AT CENTERLINE OF WALL OR SLAB WHERE ONE LAYER OF REINFORCEMENT IS PROVIDED
    - AT EACH FACE OF WALL OR SLAB WHERE TWO LAYERS OF REINFORCEMENT ARE PROVIDED
  - UNLESS OTHERWISE NOTED, SIZE OF DIAGONAL BARS SHALL BE THE SIZE OF THE LARGEST NORMAL REINFORCING BAR CUT
  - THIS DETAIL TO BE USED WHEN CALLED FOR ON THE DRAWINGS OR WHEN NO OTHER DETAIL IS SPECIFIED

DIAGONAL REINFORCEMENT AT CIRCULAR OPENINGS (8" - 11" DIA) REV 091003 S-142



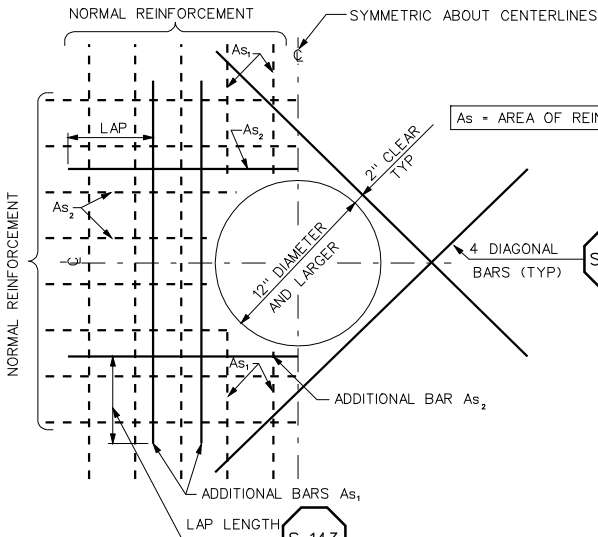
LENGTH ( * )			
BAR SIZE	HOOK X	LAP	EMBEDMENT E
*3	6"	16" (21")	12" (16")
*4	8"	16" (21")	12" (16")
*5	10"	20" (26")	15" (20")
*6	12"	28" (37")	22" (28")
*7	14"	48" (62")	37" (48")
*8	16"	62" (81")	48" (62")
*9	19"	79" (102")	61" (79")
*10	22"	100" (130")	77" (100")
*11	24"	123" (160")	95" (123")

\* USE LENGTH IN PARENTHESIS FOR WALL HORIZONTAL REBARS AND SLAB BARS WITH 12" OR MORE OF FRESH CONCRETE UNDERNEATH

NOTES:

- USE LAP LENGTHS AS DETERMINED FROM THESE TABLES UNLESS SHOWN OTHERWISE
- THE TABLES SHOWN ARE FOR  $f'_c=4000\text{psi}$ ,  $f_y=60,000\text{psi}$ , 1.5" MIN CONCRETE COVER AND 3" MIN BAR SPACING
- MULTIPLY THE LAP AND E SHOWN IN THESE TABLES BY 1.5 FOR EPOXY COATED REINFORCING
- WHEN BARS OF DIFFERENT SIZES ARE LAP SPLICED, LAP LENGTH SHALL BE THE LARGER OF:  
EMBEDMENT LENGTH OF LARGER BAR  
LAP LENGTH OF SMALLER BAR
- UNLESS NOTED OTHERWISE USE REBAR COUPLERS FOR SPLICES OF \*11 AND LARGER BARS
- ALL DOWEL BARS SHALL EXTEND AN EMBEDMENT LENGTH E INTO ANOTHER MEMBER OR ACROSS A CONSTRUCTION JOINT UNLESS SHOWN TO SPLICE WITH OTHER BARS OR TO EXTEND TO THE FAR FACE OF THE MEMBER AND END WITH A STANDARD HOOK

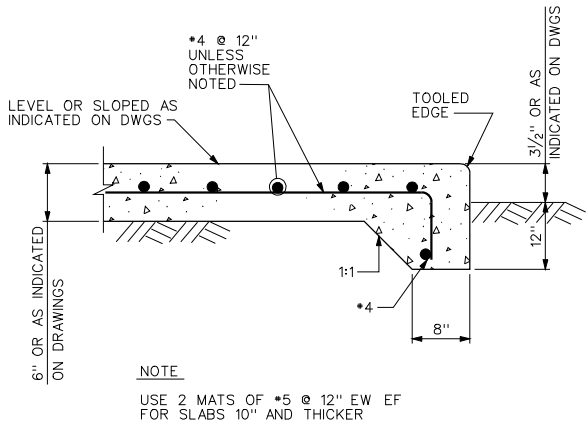
STANDARD 90° BAR HOOKS, EMBEDMENT LENGTHS AND LAP LENGTHS REV 091003 S-143



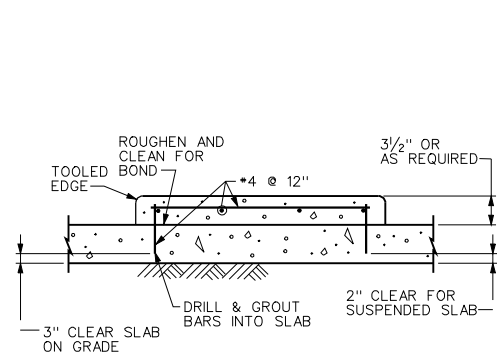
NOTES:

- CUT NORMAL REINFORCEMENT AT OPENINGS:  $As_1$  AND  $As_2 = 1/2$  AREA OF CUT BARS TO BE ADDED ON EACH SIDE OF OPENING
- ADDITIONAL BARS  $As_1$  AND  $As_2$  TO BE PLACED:
  - AT CENTERLINE OF WALLS OR SLABS WHERE ONE LAYER OF REINFORCEMENT IS PROVIDED
  - AT EACH FACE OF WALLS OR SLABS WHERE TWO LAYERS OF REINFORCEMENT ARE PROVIDED
- INCREASE SIZE OF ADDITIONAL BARS AS NEEDED TO FIT WITHIN A DISTANCE OF 2 X WALL/SLAB THICKNESS FROM OPENING, PROVIDE 2" MIN CLEAR BETWEEN BARS
- THIS DETAIL TO BE USED ONLY WHEN NO OTHER DETAIL IS INDICATED ON THE DRAWINGS
- WHERE A SLAB OR INTERSECTING WALL CONNECTS WITHIN ONE WALL THICKNESS OF THE OPENING, ADDITIONAL BARS ON THAT SIDE MAY BE OMITTED

ADDITIONAL REINFORCEMENT AT CIRCULAR OPENINGS (12" DIA OR LARGER) REV 070203 S-144



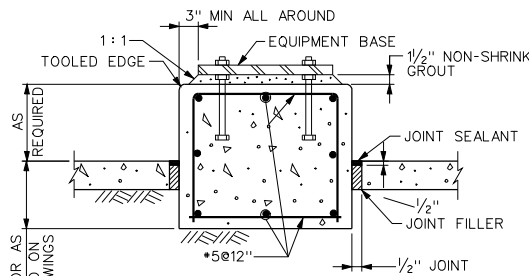
SLAB-ON-GRADE REV 022504 S-190



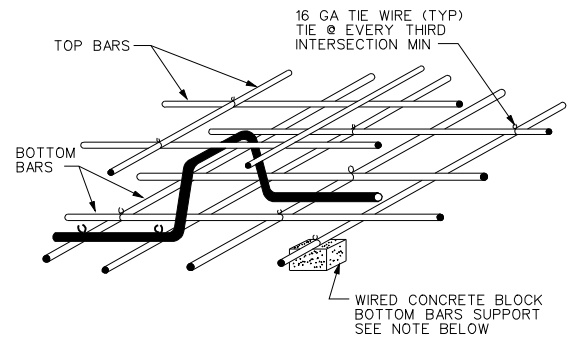
HOUSEKEEPING PAD REV 041502 S-191

NOTE:

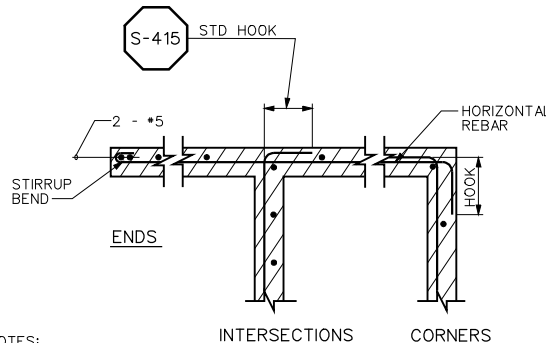
WHERE NO DIMENSION IS INDICATED ON THE DRAWINGS, BASE DEPTH SHALL BE SET SO THAT THE BASE WEIGHS AT LEAST TWICE THE WEIGHT OF THE EQUIPMENT SUPPORTED



EQUIPMENT BASE ON GRADE WITH SEPARATING JOINT REV 080999 S-193



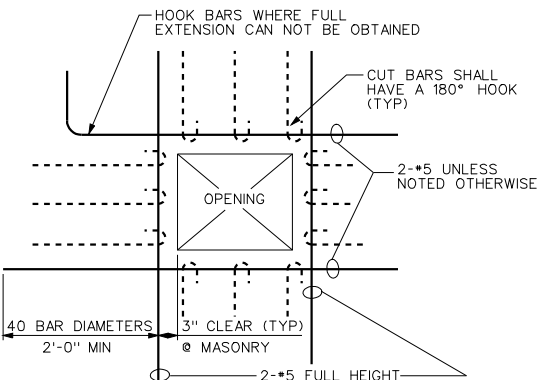
REINFORCEMENT SUPPORT REV 060199 S-204



NOTES:

- DEEP CUT BOND BEAM BLOCKS SHALL BE USED WHERE HORIZONTAL REINFORCING STEEL IS EMBEDDED, AND ABOVE ALL OPENINGS.
- H-BLOCK BOND BEAMS MAY BE USED AT LOCATIONS OTHER THAN OPENINGS.
- HOOKS SHALL BE TAKEN TO FAR FACE.

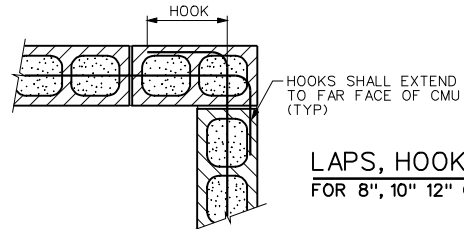
8" & 10" BLOCK WALL SECTIONS REV 091703 S-401



REINFORCEMENT AT MASONRY WALL OPENINGS REV 091803 S-410

		8" CMU		10" CMU		12" CMU	
BAR SIZE	HOOK X	LAP	EMBEDMENT E	LAP	EMBEDMENT E	LAP	EMBEDMENT E
*3	6"	15" (36")	12" (29")	15" (36")	12" (29")	24"	19"
*4	8"	21" (63")	17" (51")	16" (63")	13" (51")	42"	34"
*5	10"	35" (99")	28" (79")	26" (99")	21" (79")	64"	51"
*6	12"	74" (199")	60" (159")	54" (199")	44" (159")	106"	85"
*7	14"	108" (270")	87" (216")	78" (270")	62" (216")	124"	99"
*8	16"	164" (378")	131" (303")	114" (378")	92" (303")	152"	121"
*9	18"	227" (401")	182" (321")	154" (401")	124" (321")	171"	137"

USE LENGTH IN PARENTHESIS FOR 8" AND 10" SINGLY REINFORCED CMU WHERE THERE ARE TWO BARS IN A CELL.



LAPS, HOOKS AND EMBEDMENTS FOR 8", 10" 12" CMU REV 090303 S-415

NOTES:

- USE LAP LENGTHS AS DETERMINED FROM THESE TABLES UNLESS INDICATED OTHERWISE
- THE TABLES SHOWN ARE FOR  $f'_m=1500\text{ PSI}$  AND  $f_y=60,000\text{ PSI}$
- WHEN BARS OF DIFFERENT SIZES ARE LAP SPLICED, LAP LENGTH SHALL BE THE LARGER OF THE EMBEDMENT LENGTH OF THE LARGER BAR, OR THE LAP LENGTH OF THE SMALLER BAR.
- USE REBAR COUPLERS FOR SPLICES OF \*10 AND LARGER BARS

NO.	REVISIONS	BY	DATE
A	100% DESIGN VERIFICATION SUBMITTAL	TWP	4/11/06

BENCH MARK	
ELEVATION	DATUM
DESCRIPTION	

DRAWN BY:	MWH
CHECKED BY:	T PETRIK
SCALE:	NONE
DATE:	04/11/06
PROJECT NO:	1511331

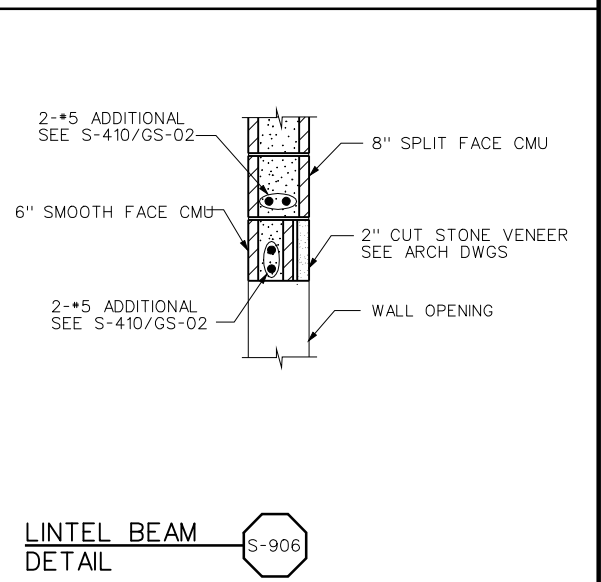
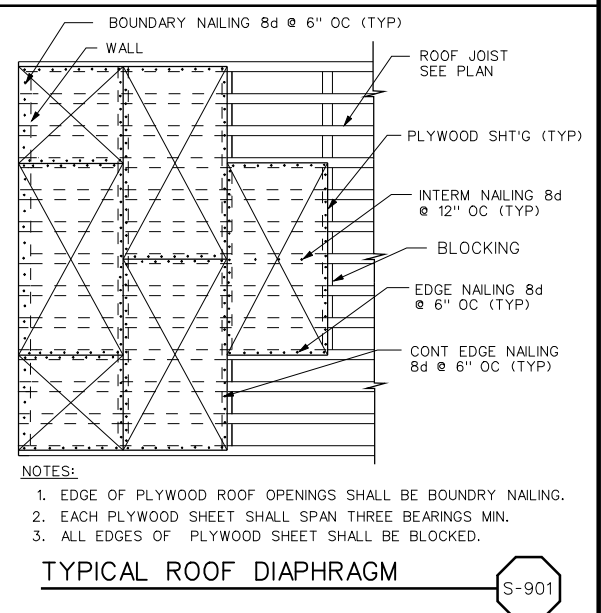
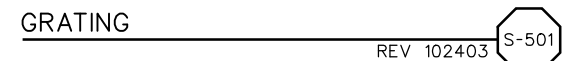


CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

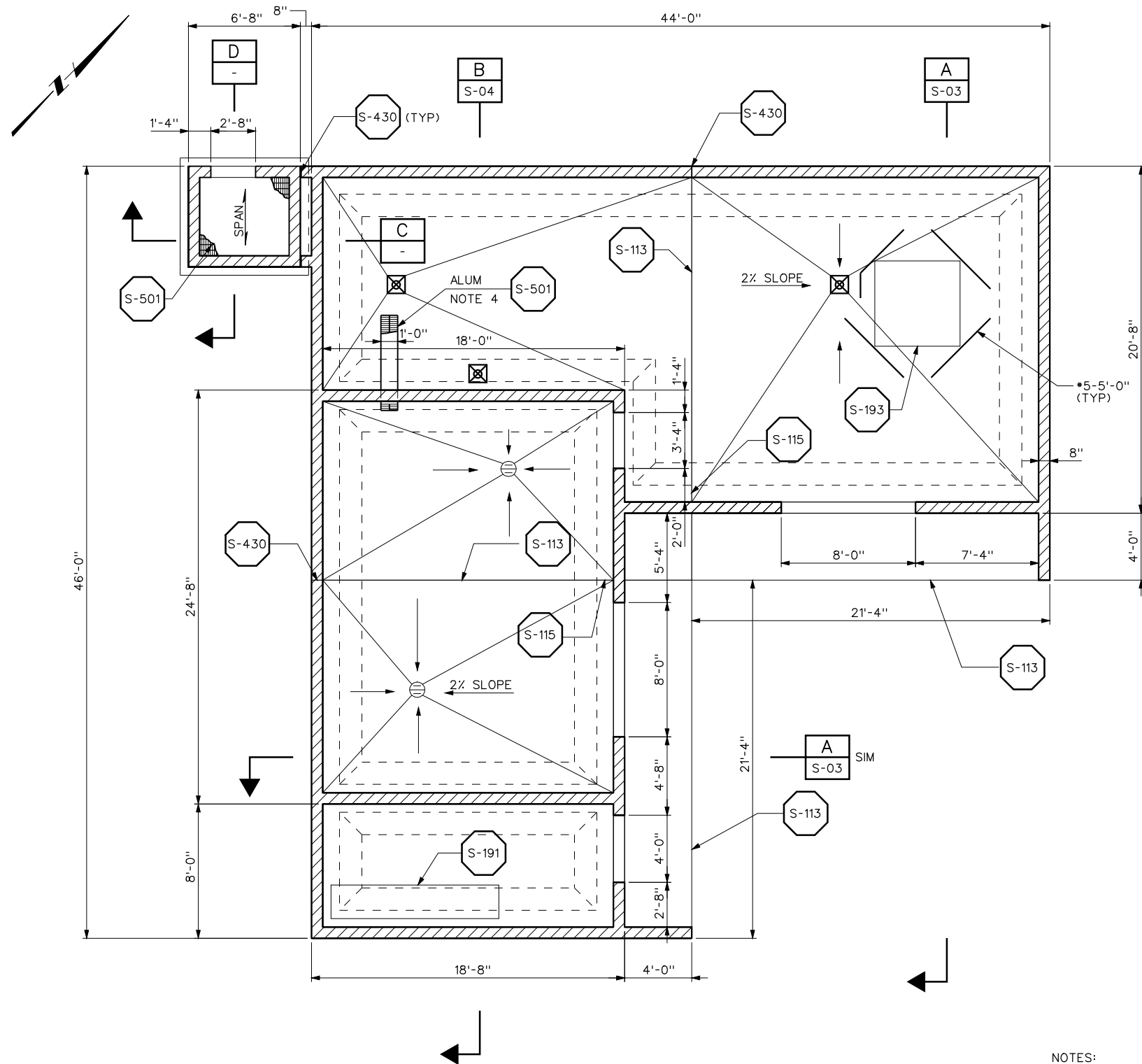
CONFORMED DRAWING

STRUCTURAL  
STANDARD DETAILS - II

GS-2



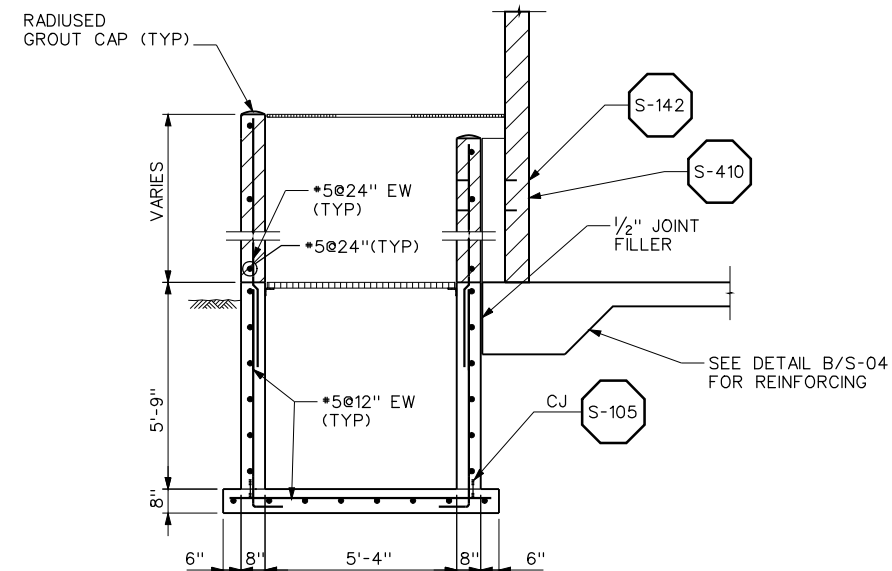
CONFORMED DRAWING	GS-3
STRUCTURAL STANDARD DETAILS - III	



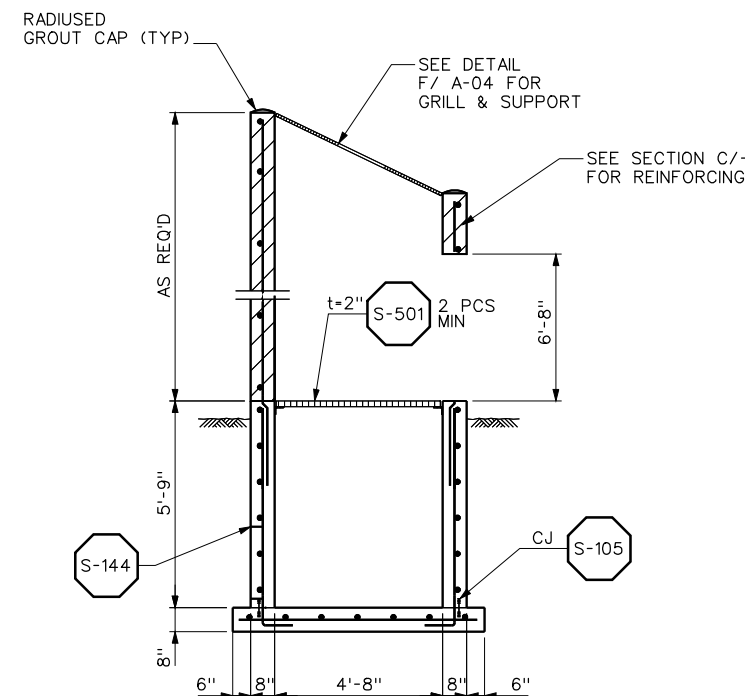
**FLOOR PLAN**  
SCALE: 1/4"=1'-0"

**NOTES:**

1. SEE ARCH AND MECH FOR LOCATION AND SIZE OF DOOR, WINDOW, LOUVER AND DUCT DRAWINGS.
2. FOR LOCATIONS AND SIZES OF EQUIPMENT BASES SEE MECH DWGS AND MFR'S SHOP DWGS.
3. OPENINGS NOT SHOWN ON STRU DWGS BUT REQ'D BY OTHER CONTRACT DWGS SHALL BE PROVIDED.
4. SLOPE FLOOR SURFACE AWAY FROM PIPE TRENCH TO SURROUNDING DRAINS.



**SECTION C**  
SCALE: 3/8"=1'-0"



**SECTION D**  
SCALE: 3/8"=1'-0"

A	100% DESIGN VERIFICATION SUBMITTAL	TWP	4/11/06
NO.	REVISIONS	BY	DATE

BENCH MARK	DATUM
ELEVATION	
DESCRIPTION	

DRAWN BY:	J IVERSON
CHECKED BY:	C HARRIS
SCALE:	AS NOTED
DATE:	04/11/06
PROJECT NO:	1511331

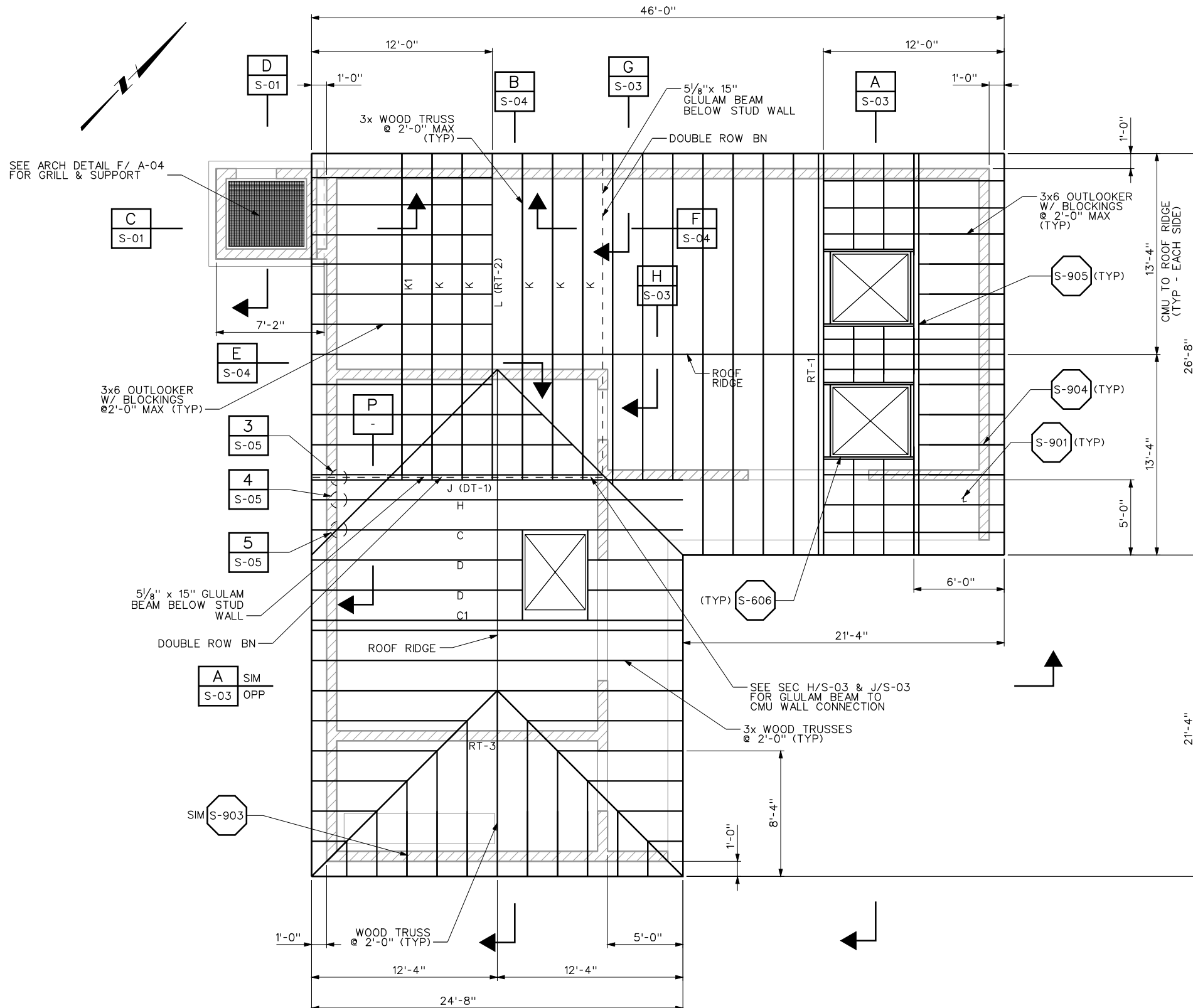


**CITY OF ROSEVILLE**  
**ENVIRONMENTAL UTILITIES DEPARTMENT**  
**WOODCREEK NORTH PUMP STATION**  
**8301 WOODCREEK OAKS BLVD. ROSEVILLE**

**CONFORMED DRAWING**

**STRUCTURAL**  
**PLAN AND SECTIONS**

**S-01**



ROOF PLAN  
SCALE: 1/4" = 1'-0"

WOOD FRAMING NOTES:

- FOR FRAMING AROUND OPENINGS IN WOODROOF SEE DETAIL S-606 AND S-607.
- NAILING SHALL BE PER CBC 2001 TABLE 23A-II-B-1 UNLESS INDICATED OTHERWISE.
- PLYWOOD FOR ROOFS SHALL BE 15/32" CD-X (INDEX 32/16) W/ EXPOSURE 1 GLUE, BLOCKED ON ALL SIDES, NAILED W/ 8d COMMON NAILS, 6" OC @ EDGES, 6" OC @ BOUNDARIES, 12" OC FIELD. SEE S-901/GS-3.
- PLYWOOD FOR WALLS ABOVE EXTERIOR CMU WALLS SHALL BE 1/2" STR I (INDEX 32/16) W/ EXPOSURE 1 GLUE, NAILED W/ 10d COMMON NAILS, 4" OC @ EDGES, 12" OC FIELD.
- METAL FRAMING DEVICES SHOWN ON THE DWGS CAN BE REPLACED W/ EQUIVALENT DESIGNED DEVICES SUBJECT TO THE APPROVAL OF THE ENGINEER.

GLULAM BEAM NOTE:

- GLULAM BEAMS SHALL BE COAST REGION DOUGLAS FIR AND SHALL BE STRESS GRADED FOR COMBINATION 24F-V4, DRY CONDITION OF USE. SEE SPEC 06100 FOR MORE INFORMATION.

WOOD TRUSS NOTES:

- TRUSS MANUFACTURER SHALL DESIGN TRUSS AND CONNECTIONS TO THE SUPPORTS. TRUSS SHOWN IS ONLY REPRESENTATIVE. THE CONTRACTOR SHALL SUBMIT DESIGN DRAWINGS AND CALCULATIONS OF THE PROPOSED ROOF SYSTEM TO THE BUILDING DEPARTMENT TO OBTAIN BUILDING PERMIT. SEE SPEC 06172 FOR MORE INFORMATION.

- THE TOP AND BOTTOM CHORDS OF ALL TRUSSES ARE TO HAVE A MIN NET THICKNESS OF 2 1/2".
- TRUSS SHALL BE DOUGLAS FIR AND DESIGNED BY THE MFR FOR THE FOLLOWING LOADS:

DEAD LOAD  
TOP CHORD ----- 10 PSF  
BOTTOM CHORD ----- 12 PSF  
ACTUAL TRUSS WEIGHT  
VENTILATION/MECHANICAL UNITS

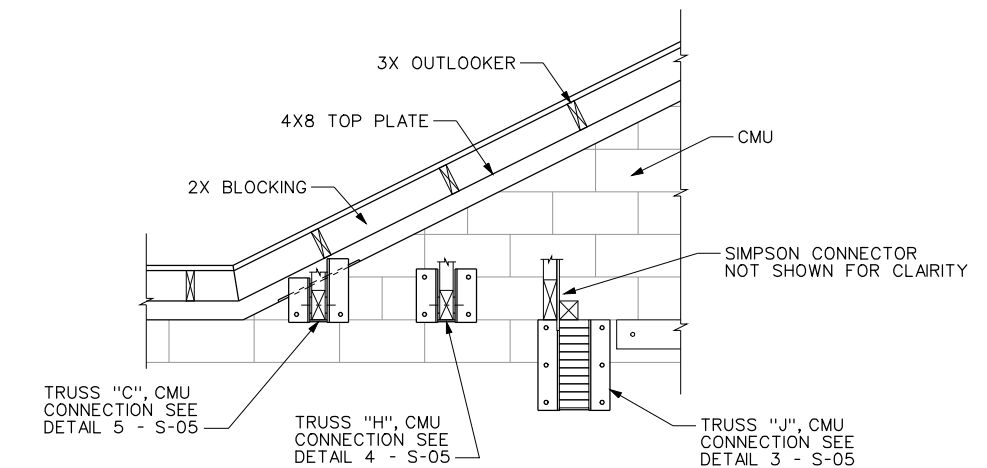
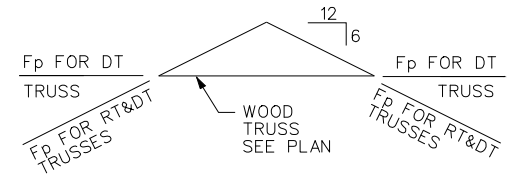
LIVE LOAD  
16 PSF BASIC

WIND LOAD  
80 MPH WIND LOAD EXPOSURE C (PER UBC 97).

- TRUSS LABELED RT-1, RT-2 AND RT-3 SHALL BE DESIGNED FOR TENSION/COMPRESSION LOAD  $F_p = 1800$  LB W/ LOAD DURATION FACTOR 1.33 IN ADDITION TO THE LOADS SPECIFIED ABOVE.

TRUSS LABELED DT-1 SHALL BE DESIGNED FOR TENSION/COMPRESSION LOAD  $F_p = 1100$  LB W/ LOAD DURATION FACTOR 1.33 IN ADDITION TO THE LOADS SPECIFIED ABOVE.

SEE DIAGRAM BELOW FOR  $F_p$ .



SECTION P  
SCALE: 3/8" = 1'-0"

NO.	100% DESIGN VERIFICATION SUBMITTAL	TWP	4/11/06
	REVISIONS	BY	DATE

BENCH MARK	
ELEVATION	DATUM
DESCRIPTION	

DRAWN BY:	J IVERSON
CHECKED BY:	C HARRIS
SCALE:	AS NOTED
DATE:	04/11/06
PROJECT NO:	1511331

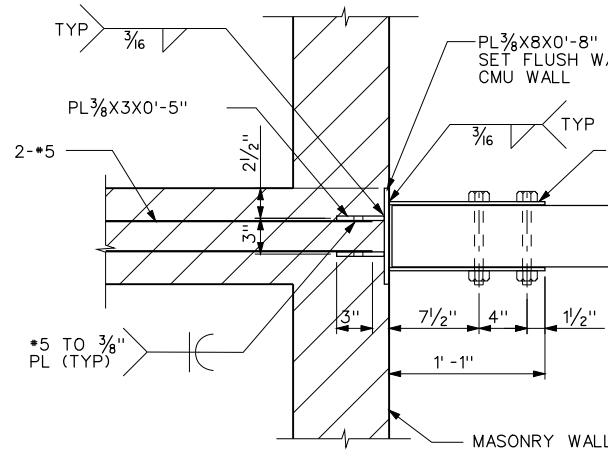
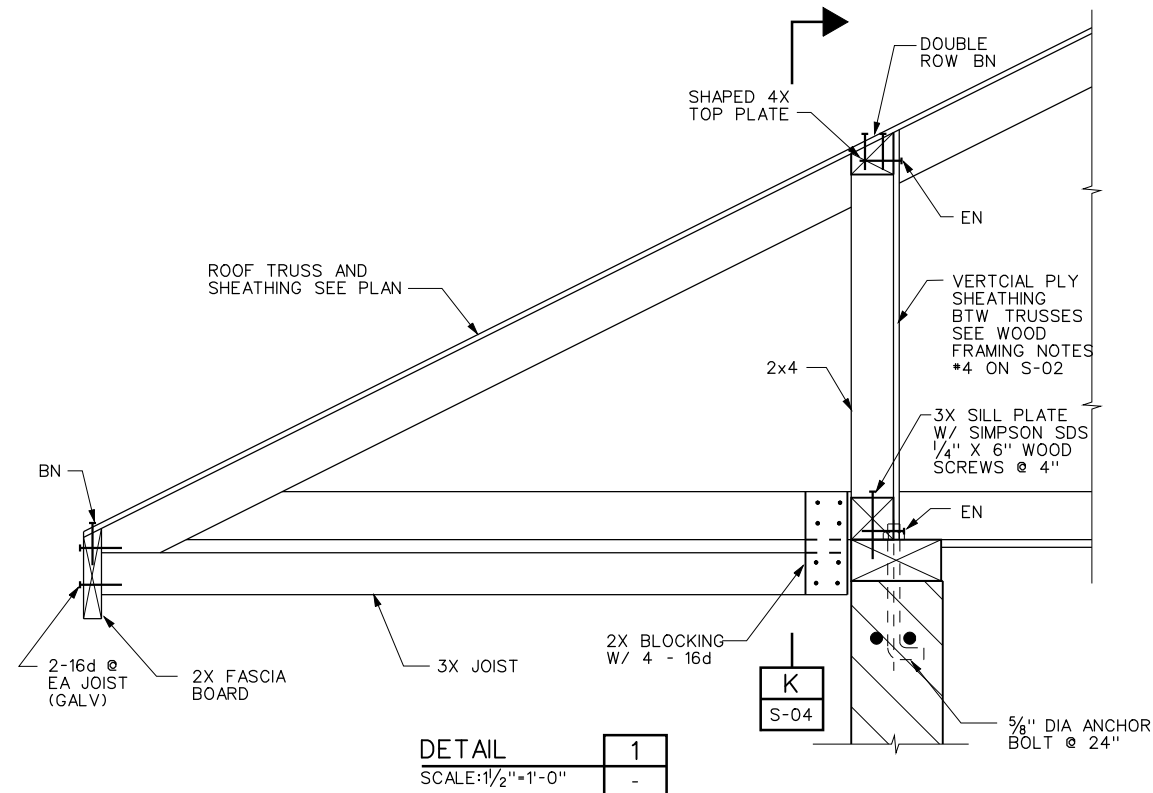
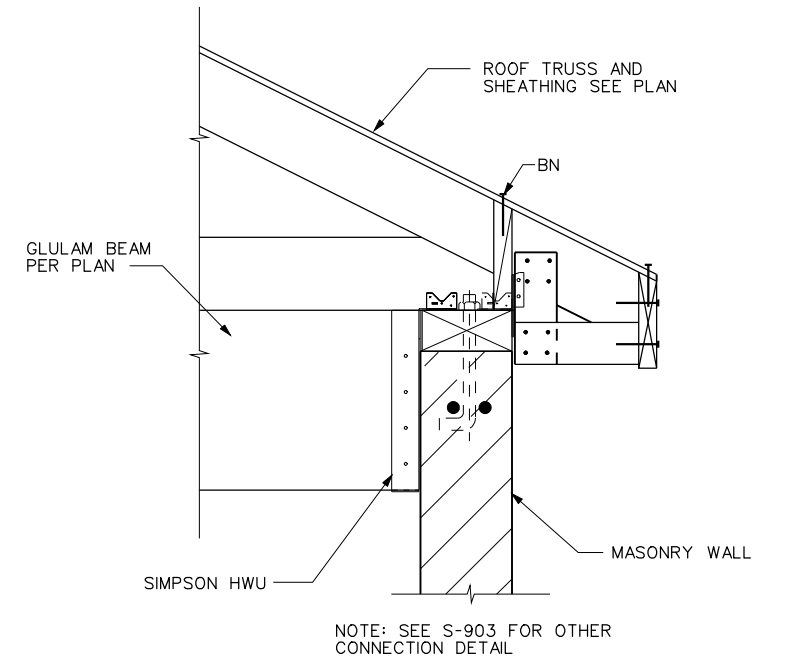
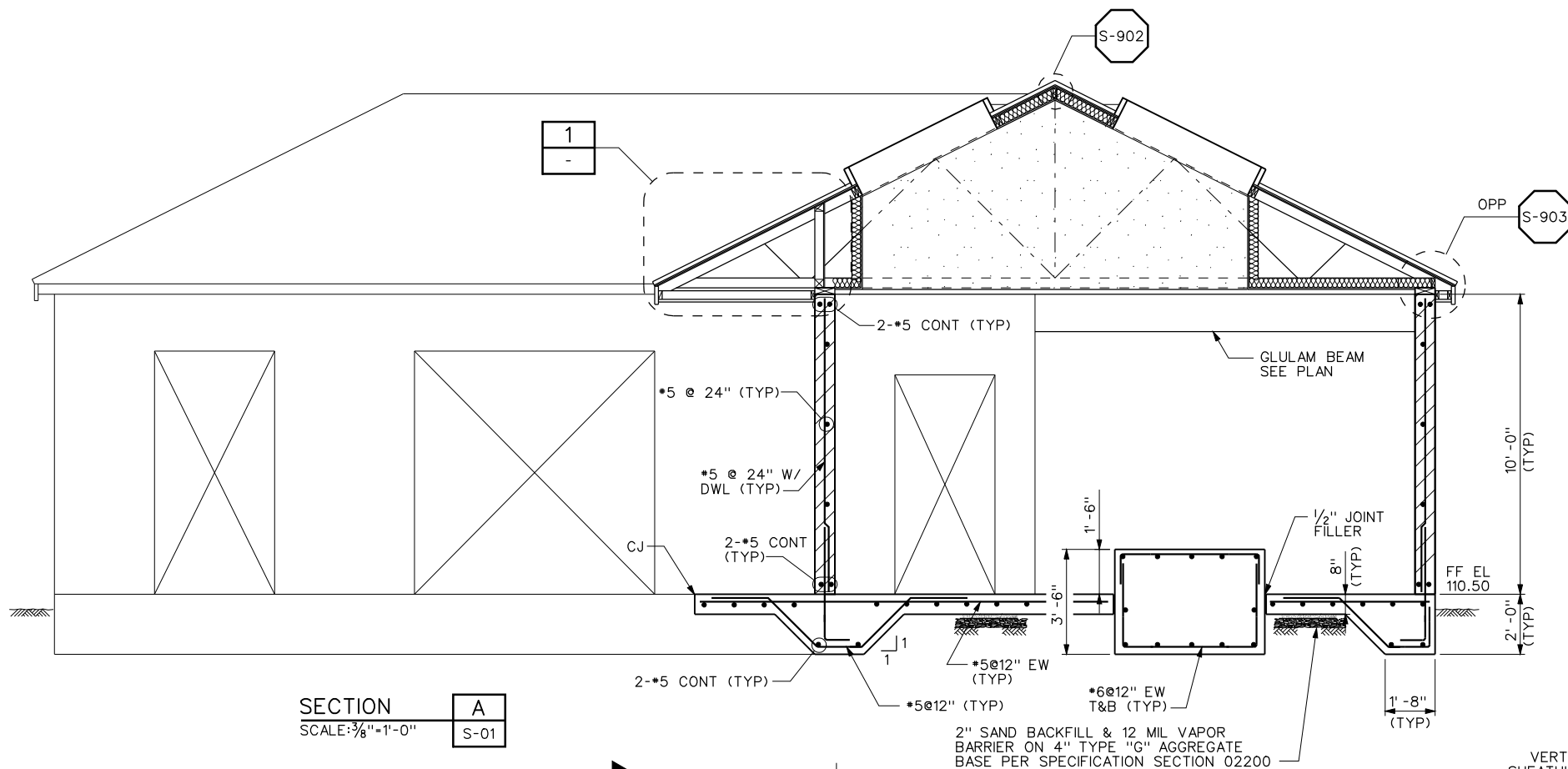


CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING

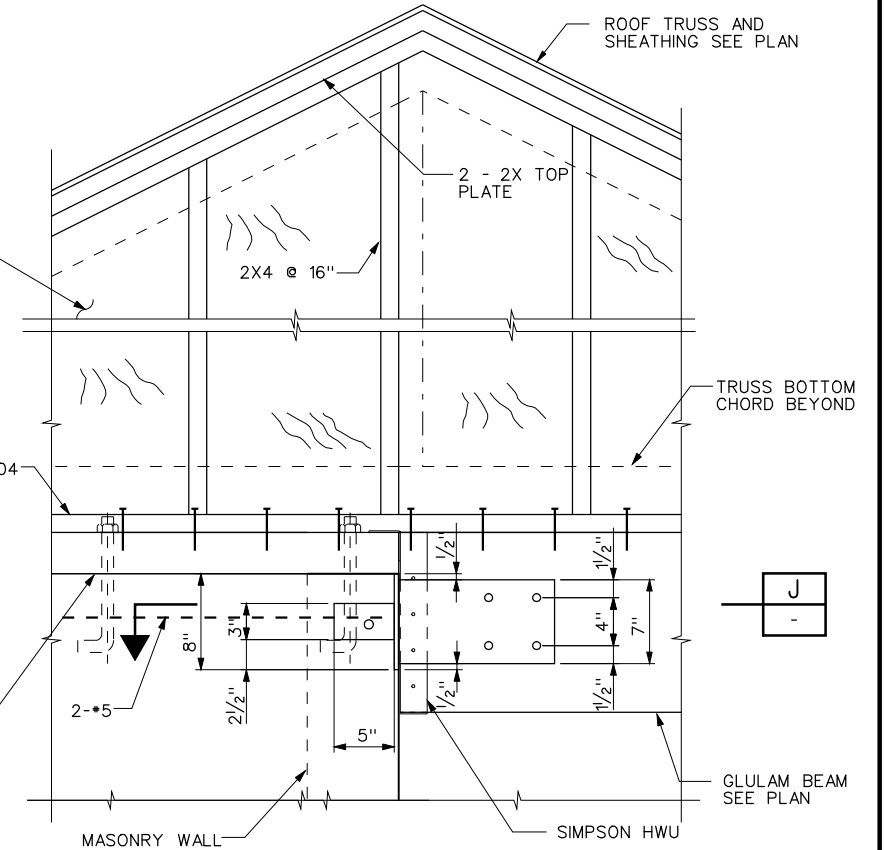
STRUCTURAL  
ROOF PLAN

S-02



NOTES:

1. REINFORCEMENT STEEL TO BE WELD SHALL BE LOW-ALLOY STEEL DEFORMED BARS CONFORMING IN QUALITY TO THE REQUIREMENTS OF ASTM A-706, "SPECIFICATIONS FOR LOW-ALLOY STEEL DEFORMED AND PLAIN BARS FOR CONCRETE REINFORCEMENT", GRADE 60.
2. 5/8" DIA ANCHOR BOLTS MUST BE EMBEDDED MIN 5" FROM TOP OF MASONRY.



BENCH MARK		
ELEVATION	DATUM	
DESCRIPTION		
A	100% DESIGN VERIFICATION SUBMITTAL	TWP 4/11/06
NO.	REVISIONS	BY DATE

J IVERSON	
DRAWN BY:	C HARRIS
CHECKED BY:	T PETRIK
SCALE:	AS NOTED
DATE:	04/11/06
PROJECT NO:	1511331

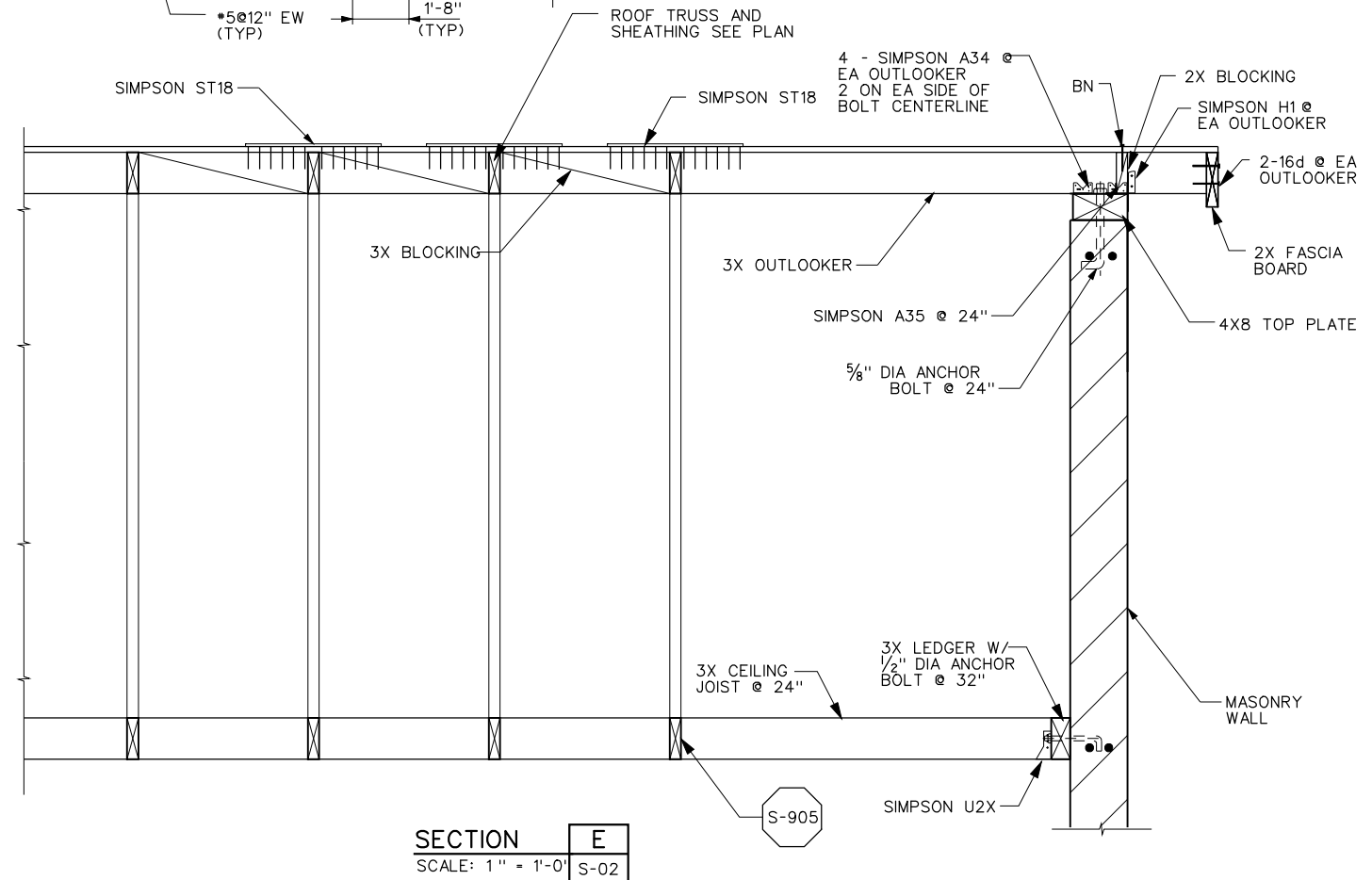
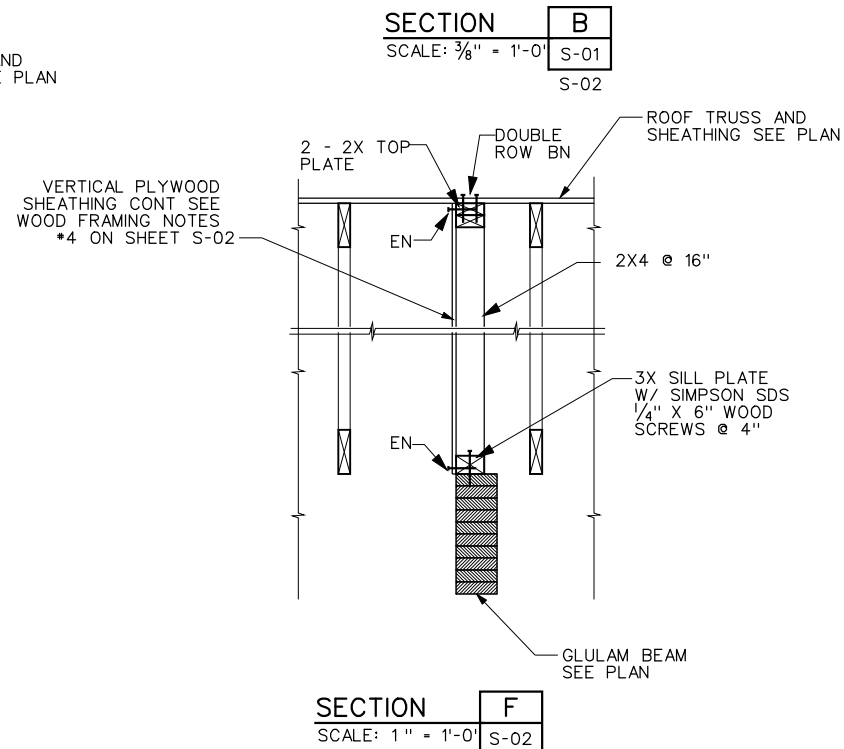
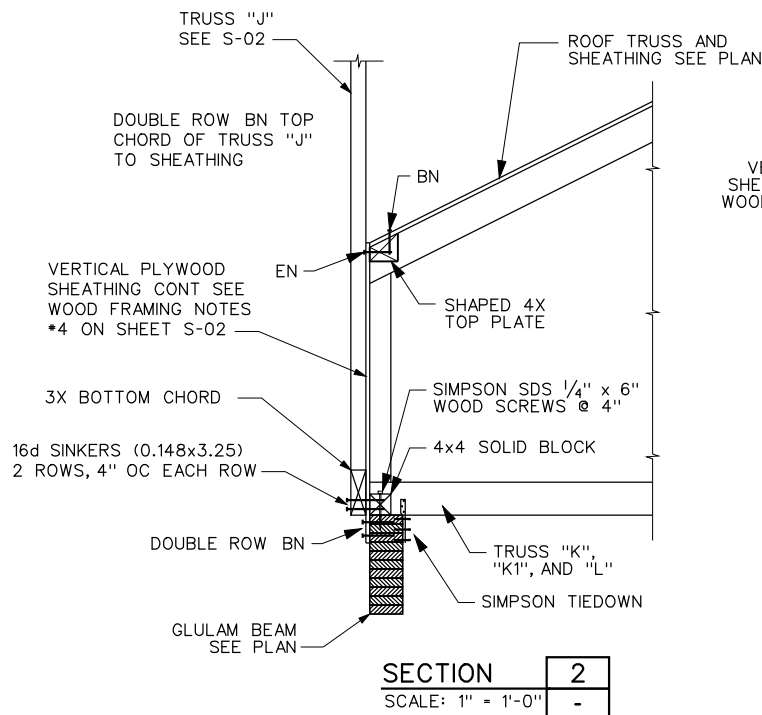
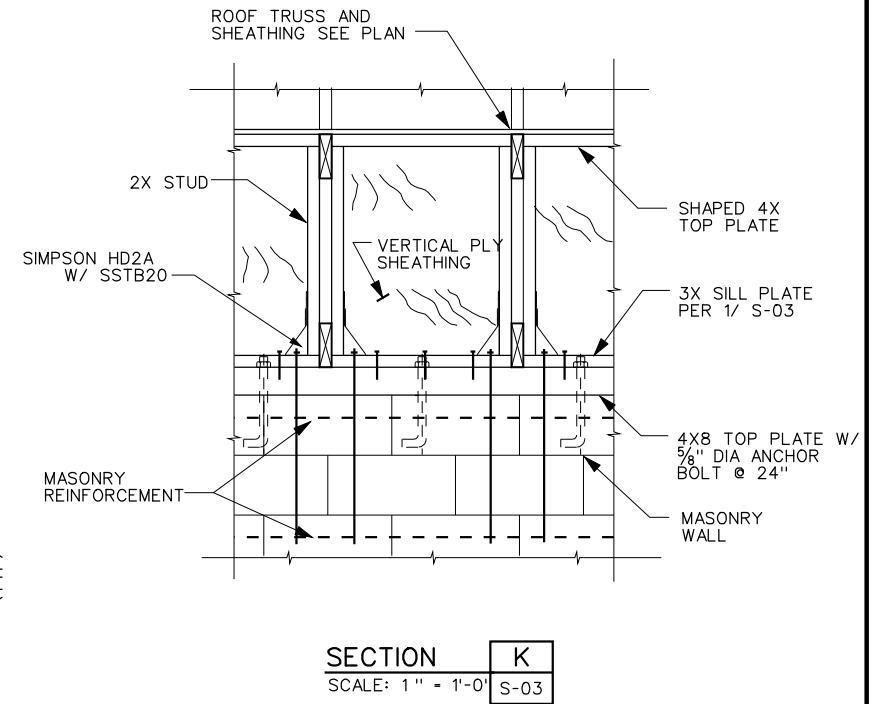
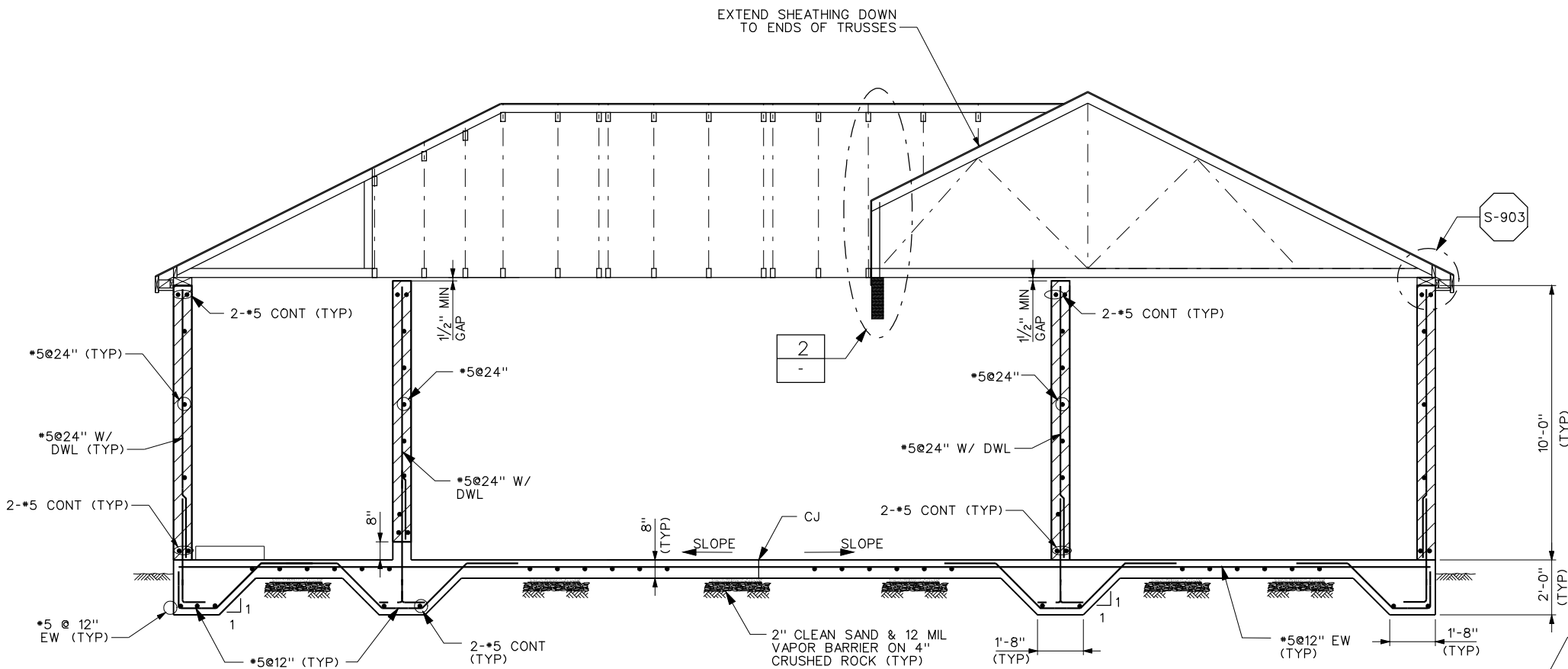


CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING

STRUCTURAL  
SECTIONS AND DETAILS - I

S-03



NO.	REVISIONS	BY	DATE
A	100% DESIGN VERIFICATION SUBMITTAL	TWP	4/11/06

BENCH MARK	
ELEVATION	DATUM
DESCRIPTION	

DRAWN BY:	J IVERSON
CHECKED BY:	C HARRIS
SCALE:	AS NOTED
DATE:	04/11/06
PROJECT NO:	1511331

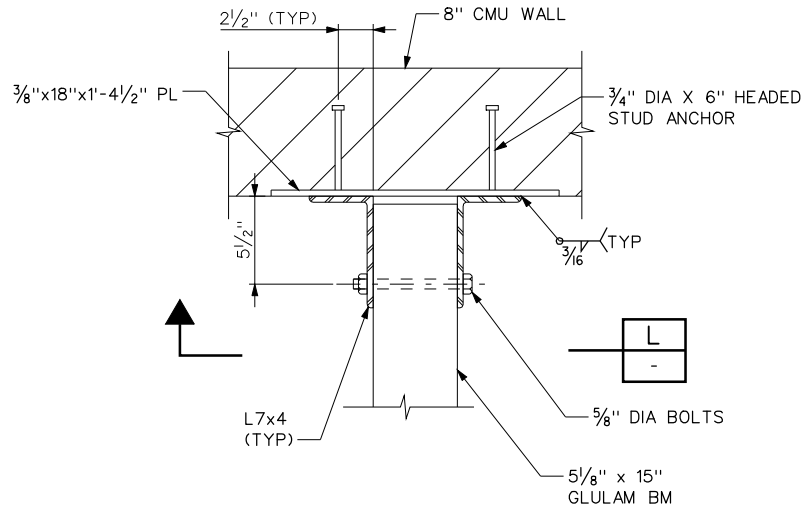


CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

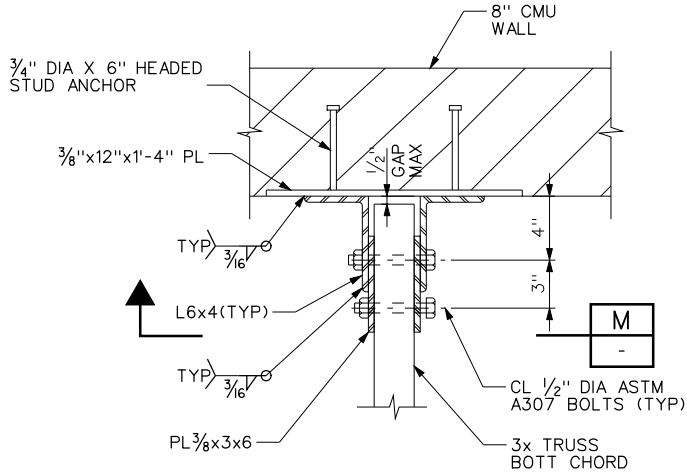
CONFORMED DRAWING

STRUCTURAL  
SECTIONS AND DETAILS - II

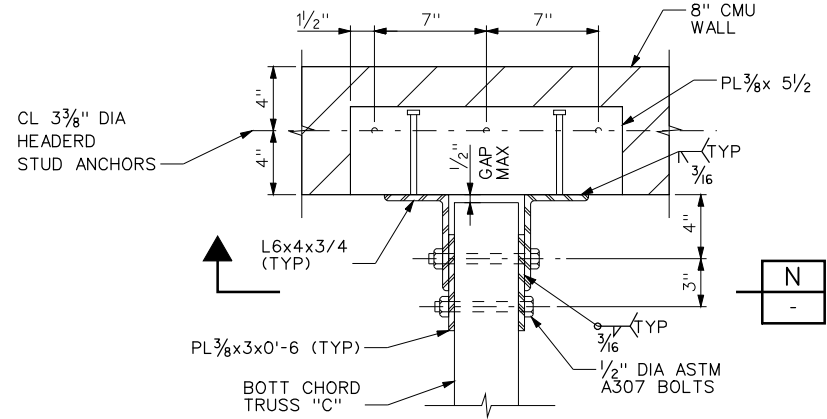
S-04



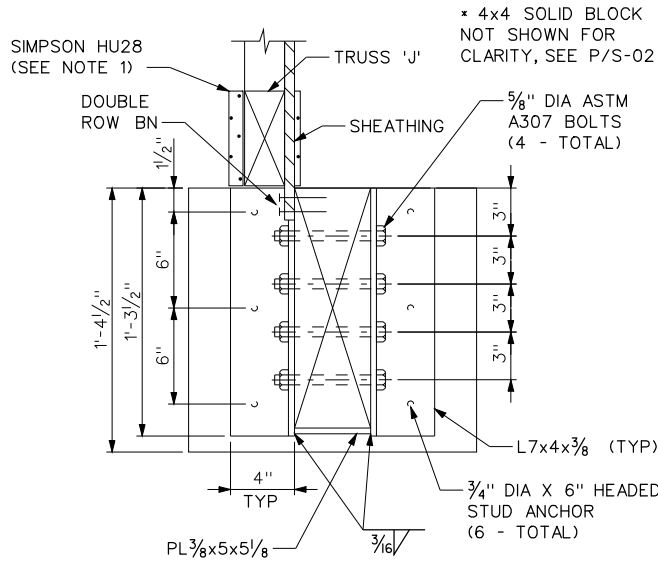
DETAIL 3  
SCALE: 2" = 1'-0"



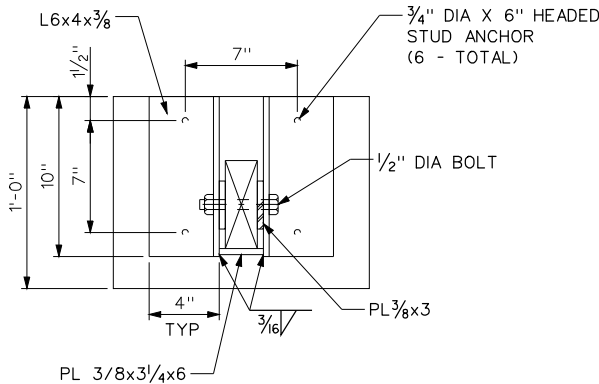
DETAIL 4  
SCALE: 2" = 1'-0"



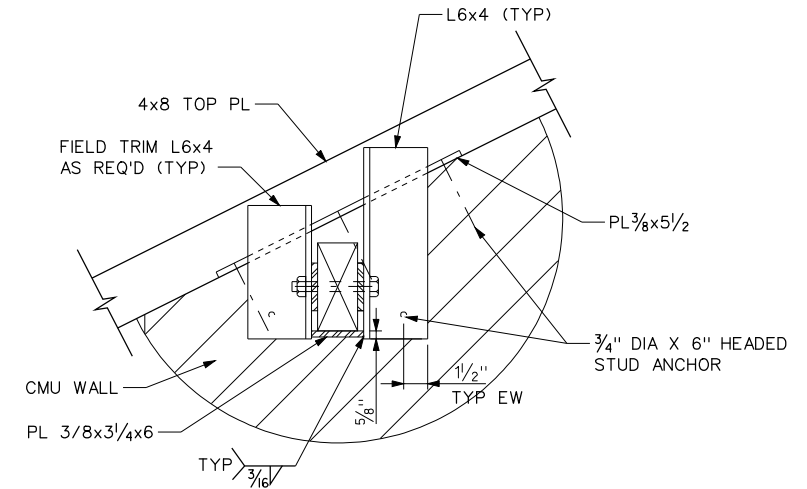
DETAIL 5  
SCALE: 2" = 1'-0"



SECTION L  
SCALE: 2" = 1'-0"



SECTION M  
SCALE: 2" = 1'-0"



SECTION N  
SCALE: 2" = 1'-0"

- NOTE:
1. INSTALL SIMPSON HU28 USING G-SIMPSON TITEN 1/4x2 3/4 FASTENERS TO CMU WALL & 4-10d x 1 1/2 NAILS TO BOTTOM CHORD OF TRUSS
  2. REFER TO SECTION P ON SHEET S-02 FOR LOCATION OF CMU CONNECTIONS

NO.	REVISIONS	BY	DATE
A	100% DESIGN VERIFICATION SUBMITTAL	TWP	4/11/06

BENCH MARK	
ELEVATION	DATUM
DESCRIPTION	

DRAWN BY:	J. IVERSON
CHECKED BY:	P. HUDDAR
SCALE:	AS NOTED
DATE:	04/11/06
PROJECT NO:	1511331



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

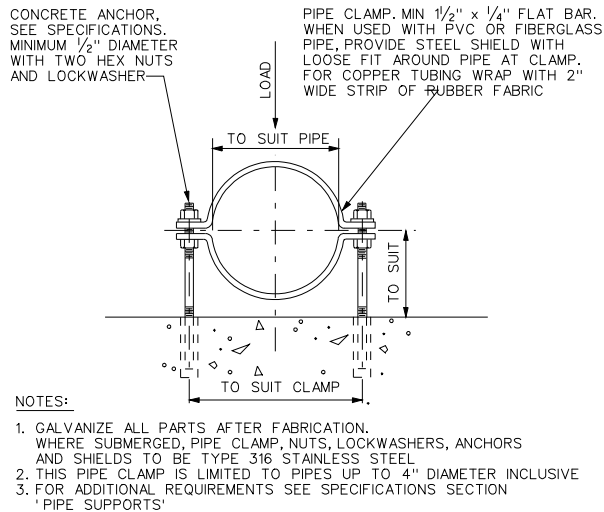
CONFORMED DRAWING

STRUCTURAL  
SECTIONS AND DETAILS - III

S-05

GM-1



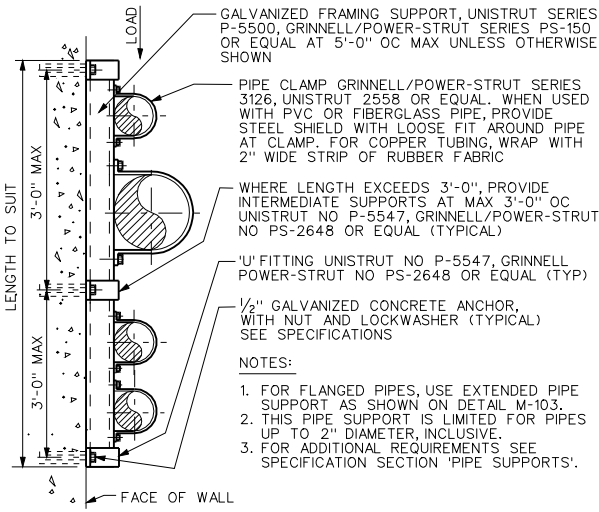


PIPE CLAMP

(FOR PIPE 4" DIAMETER AND SMALLER)

REV 072501

M-101

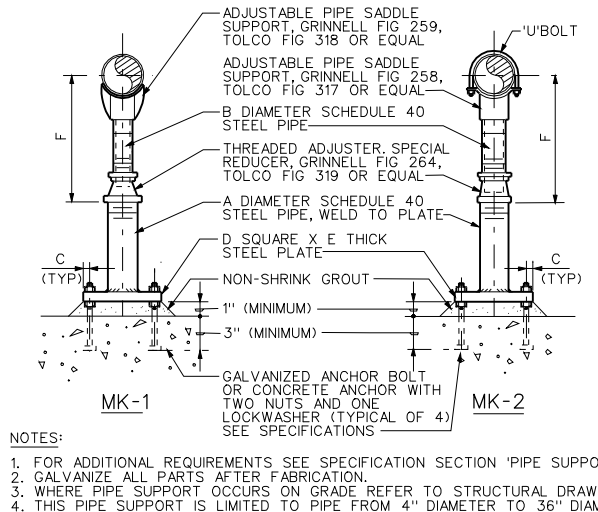


FLUSH MOUNTED PIPE SUPPORT

(FOR PIPE 2" DIAMETER AND SMALLER)

REV 072501

M-102



NOTES:

1. FOR ADDITIONAL REQUIREMENTS SEE SPECIFICATION SECTION 'PIPE SUPPORTS'.
2. GALVANIZE ALL PARTS AFTER FABRICATION.
3. WHERE PIPE SUPPORT OCCURS ON GRADE REFER TO STRUCTURAL DRAWINGS FOR DETAILS.
4. THIS PIPE SUPPORT IS LIMITED TO PIPE FROM 4" DIAMETER TO 36" DIAMETER INCLUSIVE.

ADJUSTABLE PIPE SUPPORT WITH OR WITHOUT 'U' BOLT

(FOR PIPE 36" DIAMETER AND SMALLER)

REV 061101

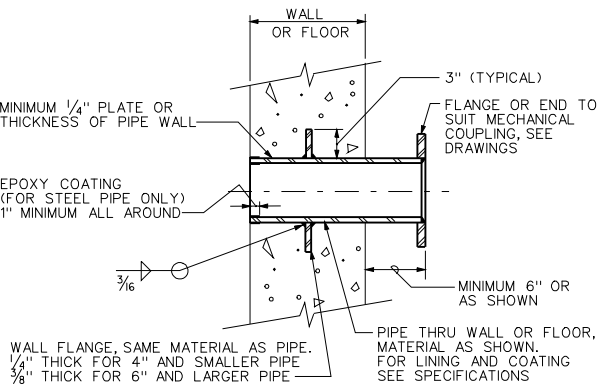
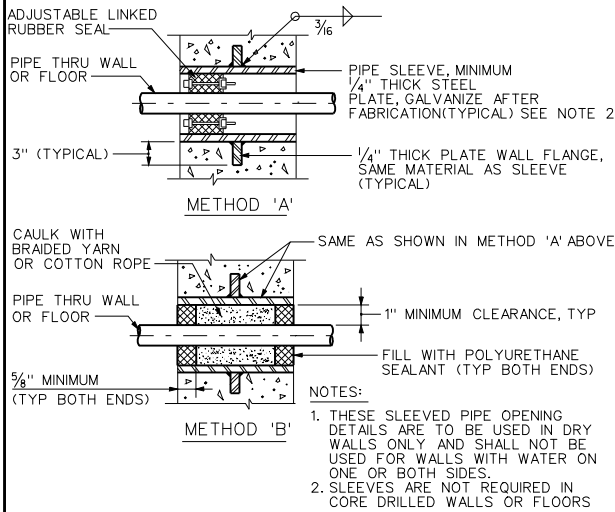
M-108

DIMENSIONS IN INCHES								
NOMINAL PIPE SIZE	A	B	C	D	E	F (APPROX)		
						(MINIMUM)	(MAXIMUM)	
4	3	2 1/2	1 1/8	7 1/2	1/2	10 1/4	14	
6	3	2 1/2	1 1/8	7 1/2	1/2	11 5/8	15 1/4	
8	3	2 1/2	1 1/8	7 1/2	1/2	13 5/8	16 1/2	
10	3	2 1/2	1 1/8	7 1/2	1/2	14 5/8	18 1/4	
12	3	2 1/2	1 1/8	7 1/2	1/2	15 5/8	19 3/4	
14	4	3	1 1/4	9	5/8	18 3/8	20 3/4	
16	4	3	1 1/4	9	5/8	19 1/8	22 1/4	
18	6	4	1 1/2	11	3/4	21 1/4	24	
20	6	4	1 1/2	11	3/4	23 1/4	25 1/2	
24	6	4	1 1/2	11	3/4	26 1/2	28 1/4	
30	6	4	1 1/2	11	3/4	29 5/8	31 1/2	
32	6	4	1 1/2	11	3/4	30 5/8	32 3/4	
36	6	4	1 1/2	11	3/4	32 5/8	34 3/4	

SLEEVED PIPE OPENING

REV 062801

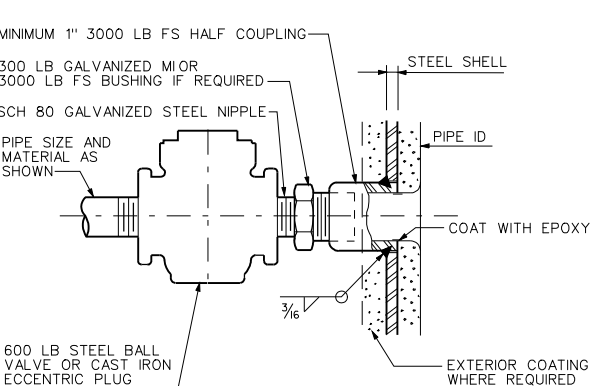
M-111



FABRICATED PIPE THIMBLE

REV 060601

M-112

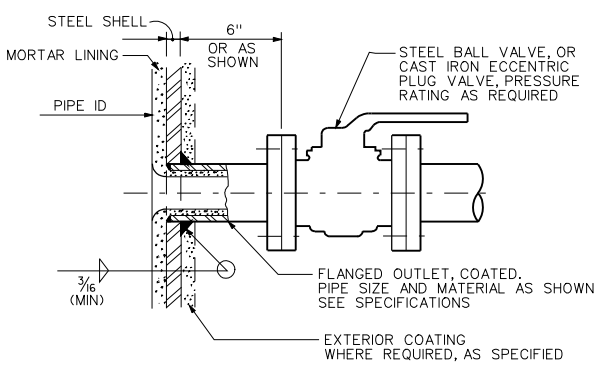


PIPE CONNECTION

2 1/2" AND SMALLER

REV 060701

M-120

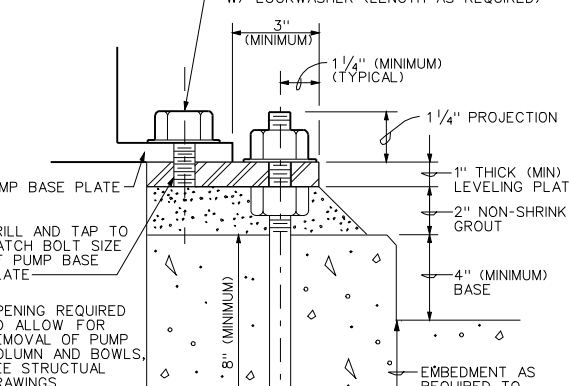


PIPELINE CONNECTION

4" AND LARGER

REV 060701

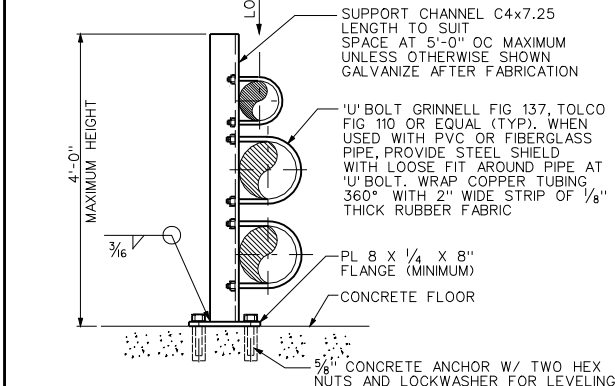
M-133



VERTICAL PUMP MOUNTING BASE

REV 061301

M-135

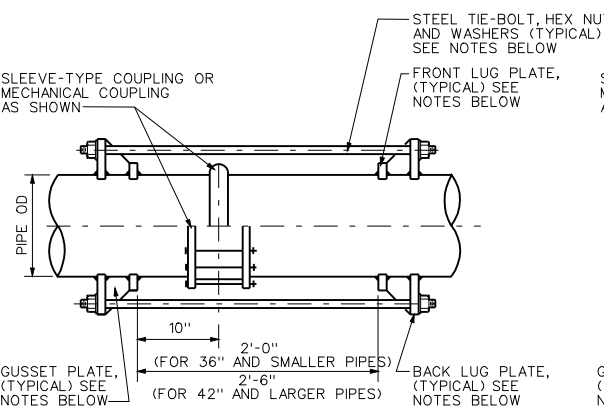


UPRIGHT PIPE SUPPORT

(FOR PIPE 12" DIAMETER AND SMALLER)

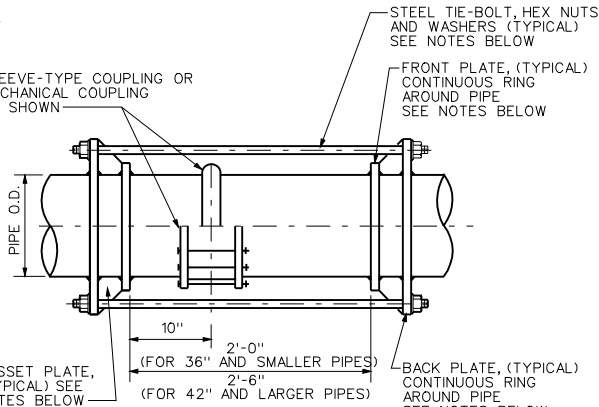
REV 072501

M-150



TYPE P (SEE NOTE 1)

1. SEE AWWA MANUAL M-11 FOR HARNESS SET SIZE, TYPE AND DESIGN REQUIREMENTS.
2. WHERE BURIED TIE-BOLTS, HEX NUTS AND WASHERS SHALL BE TYPE 316 STAINLESS STEEL.

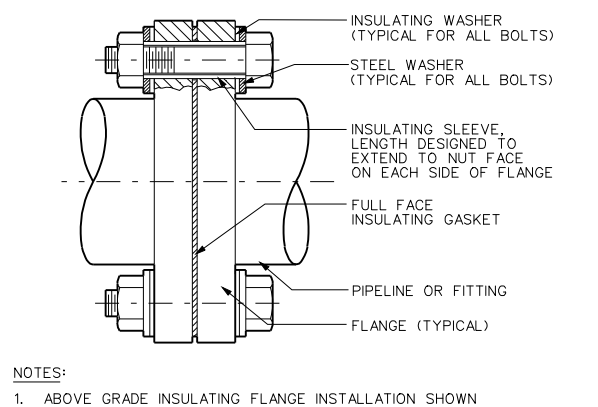


TYPE RR (SEE NOTE 1)

HARNESSED JOINT

REV 061401

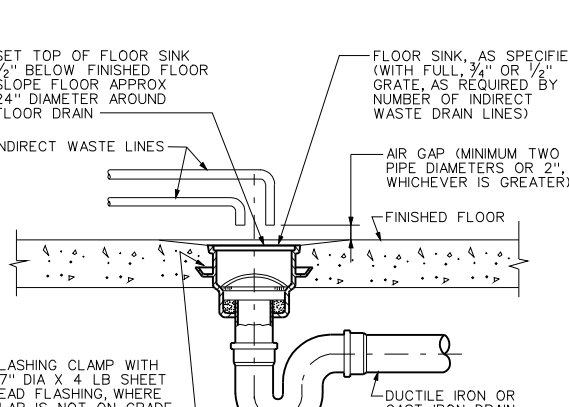
M-156



INSULATING FLANGE

REV 062801

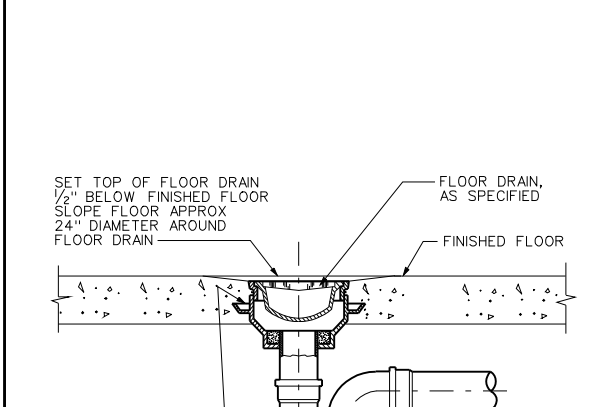
M-160



FLOOR SINK

REV 061101

M-301



FLOOR DRAIN

REV 061101

M-302

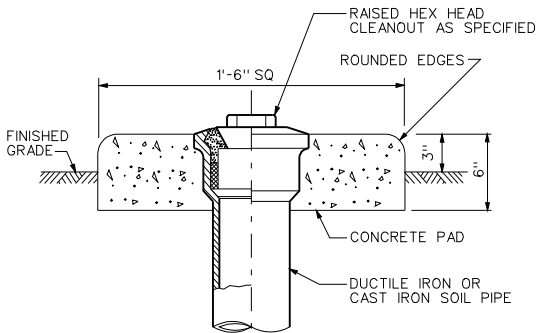
NO.	REVISIONS	BY	DATE

BENCH MARK	S. OKASAKI
ELEVATION	D. MASON
DESCRIPTION	CHECKED BY: J. OSBORN
	SCALE: NO SCALE
	DATE:
	PROJECT NO:



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

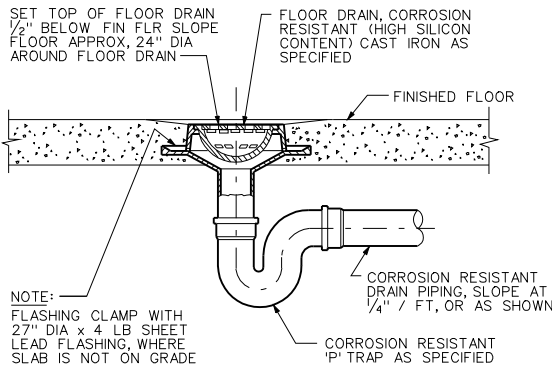
CONFORMED DRAWING  
STANDARD MECHANICAL DETAILS 1  
GM-2



NOTE:  
IN TRAFFIC AREAS PROVIDE FLUSH FINISH WITH 10" ID CAST IRON COVER AND FRAME AS SPECIFIED.

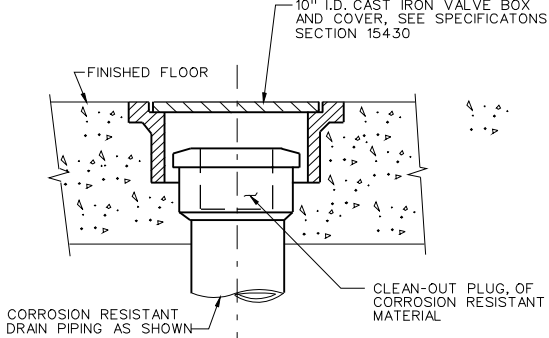
CLEANOUT TO GRADE

REV 010199



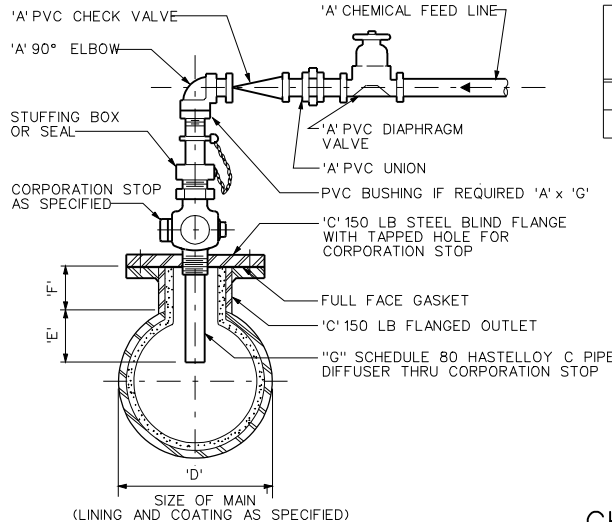
CORROSION RESISTANT FLOOR DRAIN

M-310



CORROSION RESISTANT CLEANOUT IN FINISHED FLOOR

M-312

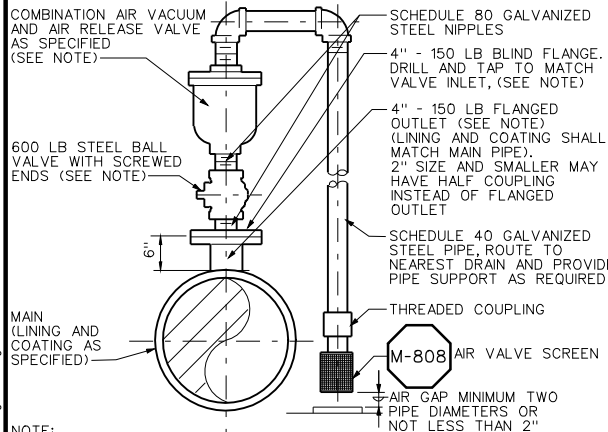


IDENTIFICATION MARK	CHEMICAL	GPH	DIMENSIONS IN INCHES						
			'A'	'B'	'C'	'D'	'E'	'F'	'G'
	Ca(OCl)2 / NaOCl (FUTURE)	6.57	1	-	2	12	6	3	1/2
	NaF (FUTURE)	6.87	1	-	2	12	6	3	1/2

NOTE:  
1. FOR FUTURE FLUORIDE LOCATION CONTRACTOR SHALL INSTALL DIFFUSER AND TERMINATE PIPING AFTER DIAPHRAGM VALVE. FLUORIDE CHEMICAL FEED PIPING SHALL BE ROUTED AND CONNECTED TO VALVE IN THE FUTURE.

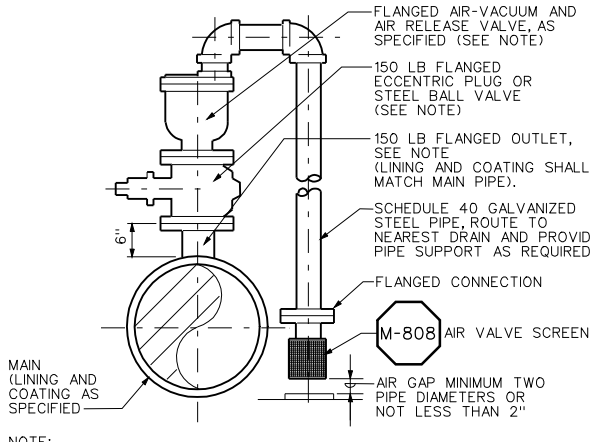
CHEMICAL DIFFUSER

M-707



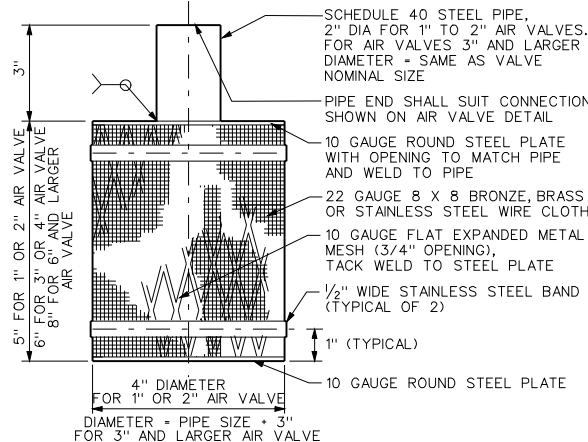
AIR-VACUUM AND AIR-RELEASE VALVE ASSEMBLY 3" AND SMALLER

REV 061801



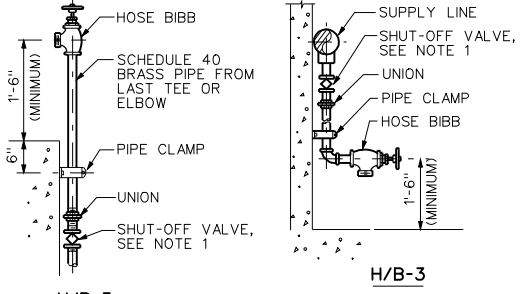
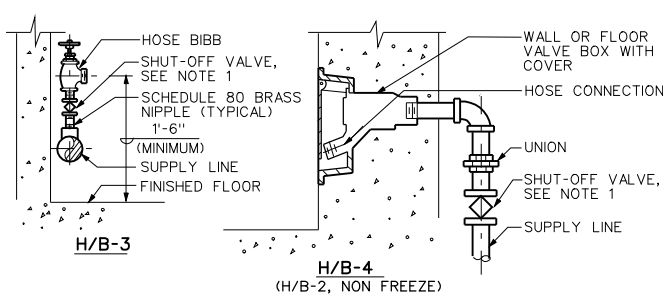
AIR-VACUUM AND AIR-RELEASE VALVE ASSEMBLY 4" AND LARGER

REV 061801



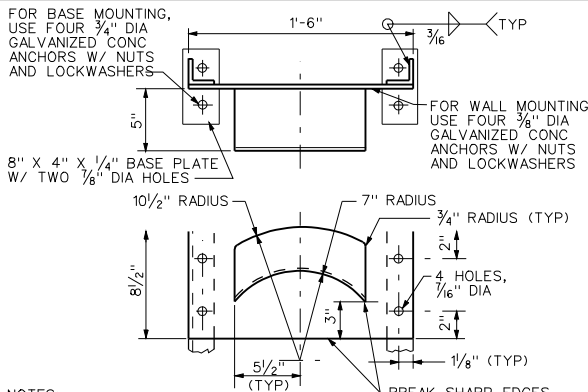
AIR VALVE SCREEN

REV 061901



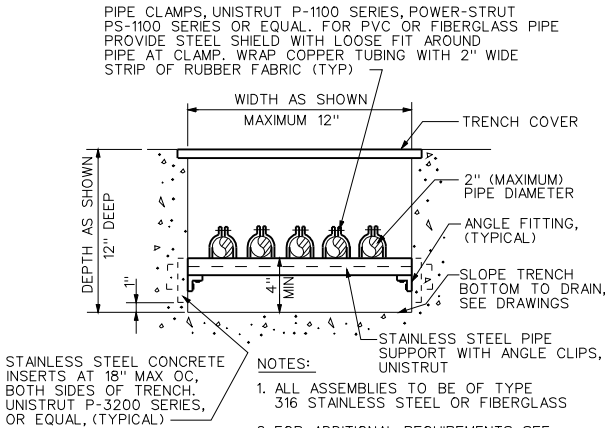
HOSE BIBBS

REV 062001



HOSE RACK

REV 010199



PIPE TRENCH

REV 040606



BENCH MARK  
ELEVATION \_\_\_\_\_ DATUM \_\_\_\_\_  
DESCRIPTION \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

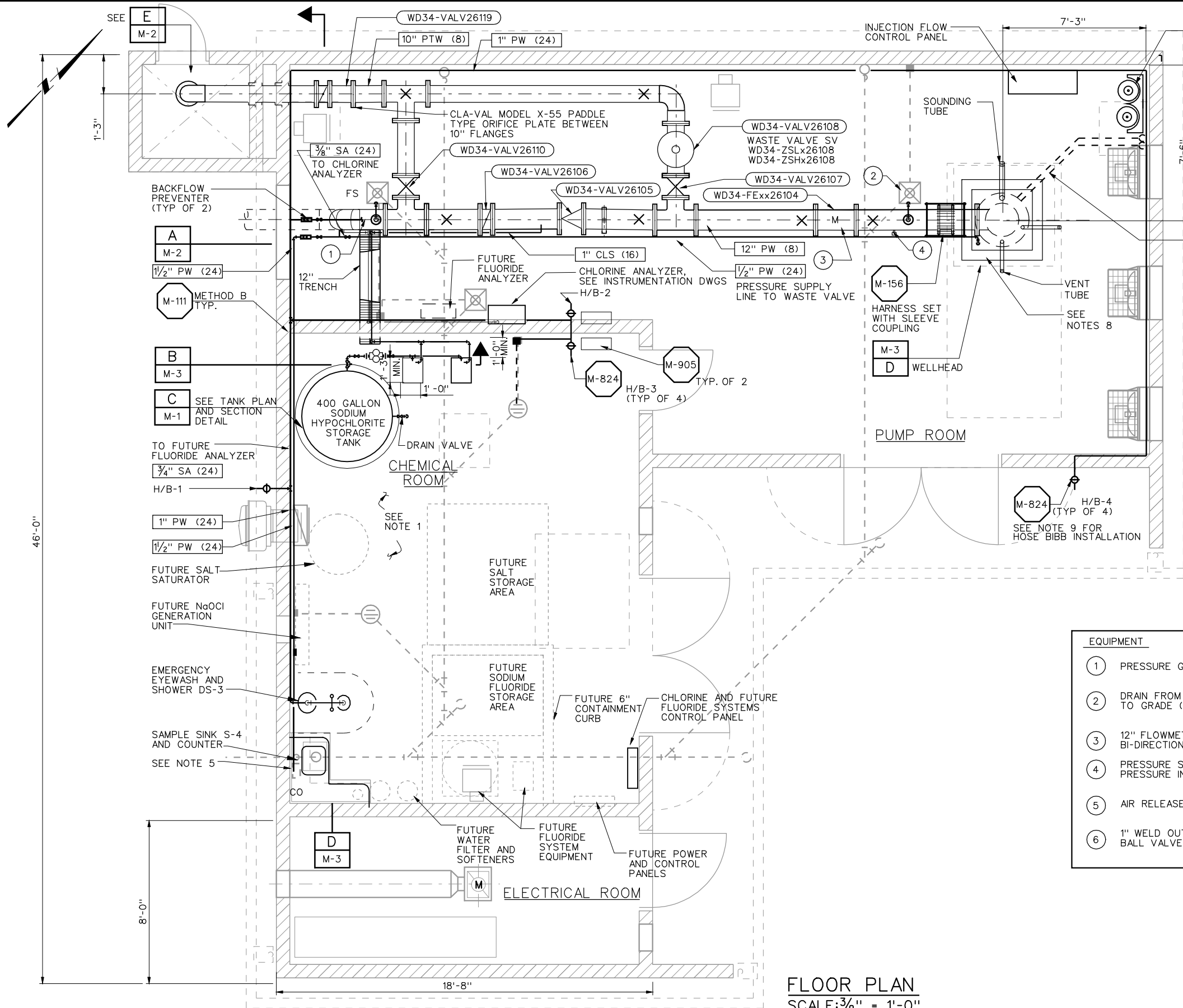
DRAWN BY: D. MASON  
CHECKED BY: J. OSBORN  
SCALE: NO SCALE  
DATE: \_\_\_\_\_  
PROJECT NO: \_\_\_\_\_



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

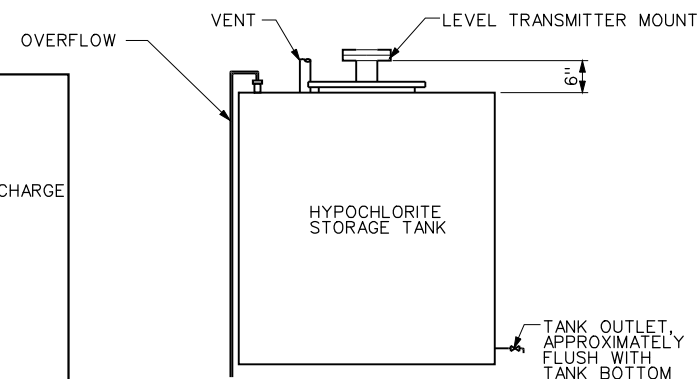
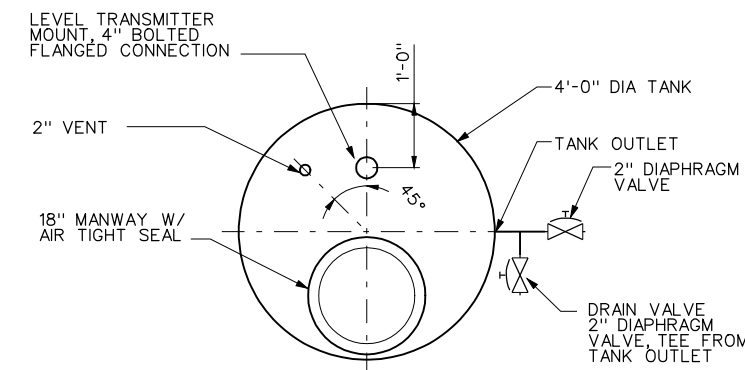
CONFORMED DRAWING  
STANDARD MECHANICAL DETAILS 2

GM-3



NOTES:

- 1) FLOORS IN CHEMICAL ROOM ARE C-3 SURFACES; PROVIDE COATING SYSTEM PER SECTION 09800.
- 2) PROVIDE WYE TYPE CLEANOUT ON VERTICAL VENT RUN MINIMUM 4" ABOVE FINISHED FLOOR.
- 3) FOR TANK INFORMATION SEE SPECIFICATION SECTION 13675.
- 4) PROVIDE TEE AND 3/4" GATE VALVE FOR FUTURE FLUORIDE SYSTEM.
- 5) SAMPLE LINE DETAIL AS PER CITY STANDARDS.
- 6) CHEMICAL RESISTANT PIPING SHALL BE USED FOR CONNECTIONS TO AND FROM CURRENT AND FUTURE CHLORINE AND FLUORIDE EQUIPMENT.
- 7) CONTRACTOR SHALL CUT DOWN AND EXTEND WELL CASING, GRAVEL MAKE-UP, VENT, AND SOUNDING TUBE TO FIELD FIT THE PUMP SOLE PLATE INSTALLATION AS SHOWN ON DRAWING M-3.
- 8) FIELD VERIFY THE LOCATIONS OF THE GRAVEL MAKE-UP VENT, AND SOUNDING TUBE PRIOR TO SUBMITTING SHOP DRAWINGS FOR PUMP BASE PLATES.
- 9) ALL HOSE BIBBS SHALL INCORPORATE IN DIVIDUAL BACKFLOW PREVENTERS.



TANK PLAN AND SECTION DETAIL C  
SCALE: NONE

EQUIPMENT	
①	PRESSURE GAGE
②	DRAIN FROM AIR VALVE DISCHARGE TO GRADE (TYP)
③	12" FLOWMETER BI-DIRECTIONAL UNIT
④	PRESSURE SWITCH & PRESSURE INDICATOR
⑤	AIR RELEASE VALVE
⑥	1" WELD OUTLET COUPLING W/ BALL VALVE AND STRAINER

FLOOR PLAN  
SCALE: 3/8" = 1'-0"

1	REVISE ALL TAG NUMBERS (ADD. 1)	EAG	3/07
NO.	REVISIONS	BY	DATE

BENCH MARK	
ELEVATION	DATUM
DESCRIPTION	

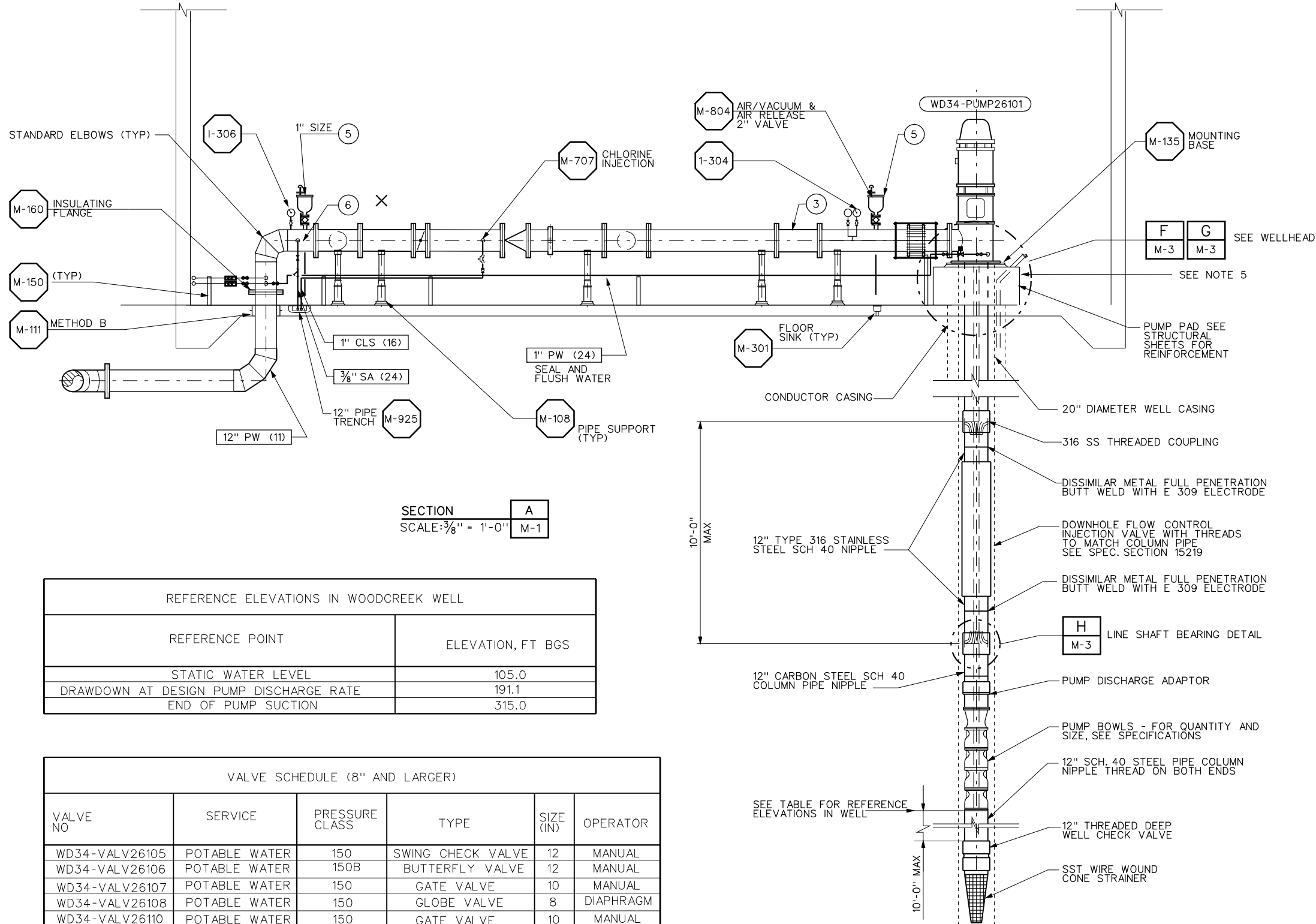
S. OKASAKI
DRAWN BY: S. OKASAKI
CHECKED BY: J. OSBORN
SCALE:
DATE:
PROJECT NO:



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING  
MECHANICAL FLOOR PLAN

M-1

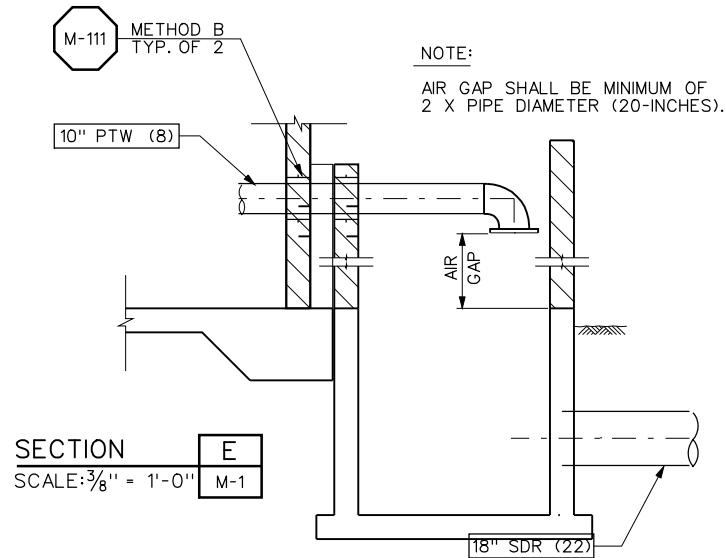


- NOTES:
- 1) COORDINATE HEIGHT OF DISCHARGE PIPE WITH PUMP MANUFACTURER BASED ON 18" PUMP PAD HEIGHT.
  - 2) FIELD VERIFY THE LOCATIONS OF THE GRAVEL MAKE-UP, VENT, AND SOUNDING TUBE PRIOR TO SUBMITTING SHOP DRAWINGS FOR PUMP BASE PLATES.
  - 3) CONTRACTOR SHALL CUT DOWN AND EXTEND WELL CASING, GRAVEL MAKE-UP, VENT AND SOUNDING TUBE TO FIELD FIT THE PUMP SOLE PLATE, INSTALLATION AS SHOWN ON DWG M-03.
  - 4) CHEMICAL RESISTANT PIPING SHALL BE USED FOR CONNECTIONS TO AND FROM CURRENT AND FUTURE CHLORINE AND FLUORIDE EQUIPMENT.
  - 5) FOUNDATION SHALL BE DESIGNED TO CARRY THE ENTIRE WEIGHT OF THE PUMP ASSEMBLY. PROJECTED BASE AREA SHALL EXCEED THE BEARING CAPACITY OF SOIL SO THAT NO SETTLEMENT WILL OCCUR.

EQUIPMENT	
1	PRESSURE GAGE
2	DRAIN FROM AIR VALVE DISCHARGE TO GRADE (TYP)
3	12" FLOWMETER
4	PRESSURE SWITCH & PRESSURE INDICATOR
5	AIR RELEASE VALVE
6	1" WELD OUTLET COUPLING W/ BALL VALVE AND STRAINER

REFERENCE ELEVATIONS IN WOODCREEK WELL	
REFERENCE POINT	ELEVATION, FT BGS
STATIC WATER LEVEL	105.0
DRAWDOWN AT DESIGN PUMP DISCHARGE RATE	191.1
END OF PUMP SUCTION	315.0

VALVE SCHEDULE (8" AND LARGER)					
VALVE NO	SERVICE	PRESSURE CLASS	TYPE	SIZE (IN)	OPERATOR
WD34-VALV26105	POTABLE WATER	150	SWING CHECK VALVE	12	MANUAL
WD34-VALV26106	POTABLE WATER	150B	BUTTERFLY VALVE	12	MANUAL
WD34-VALV26107	POTABLE WATER	150	GATE VALVE	10	MANUAL
WD34-VALV26108	POTABLE WATER	150	GLOBE VALVE	8	DIAPHRAGM
WD34-VALV26110	POTABLE WATER	150	GATE VALVE	10	MANUAL
WD34-VALV26119	POTABLE WATER	150B	BUTTERFLY VALVE	10	MANUAL



NO.	REVISIONS	BY	DATE
5	ADD "SWING" TO CHECK VALVE IN TABLE (ADD. 4)	EAG	4/07
4	REVISE ALL TAG NUMBERS (ADD. 1)	EAG	3/07
3	CHANGE 24" SDR TO 18" (ADD. 1)	EAG	3/07
2	CHANGE 16" DISCH. PIPE TO 12" MOVE PIPE SUP. (ADD. 1)	EAG	3/07
1	UPDATE "REFERENCE ELEVATIONS" TABLE (ADD. 1)	EAG	3/07

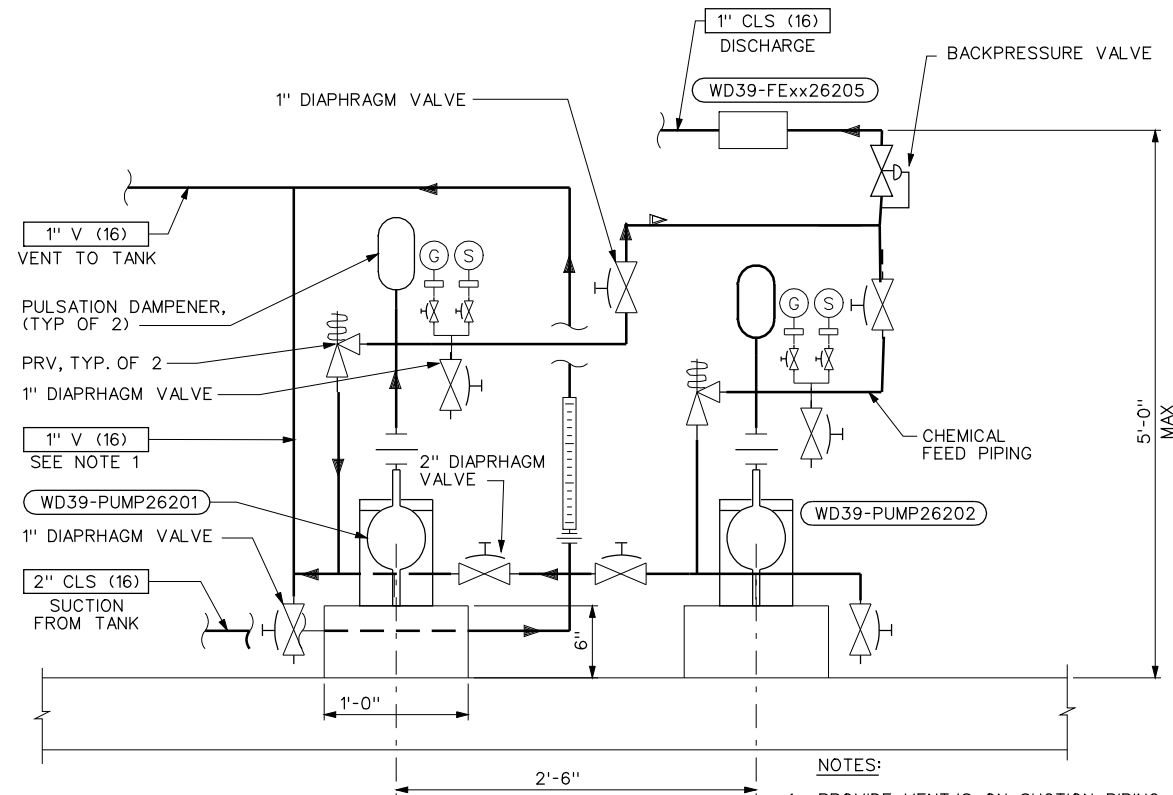
BENCH MARK	
ELEVATION _____ DATUM _____	
DESCRIPTION _____	

S. OKASAKI
DRAWN BY: S. OKASAKI
CHECKED BY: J. OSBORN
SCALE: _____
DATE: _____
PROJECT NO: _____

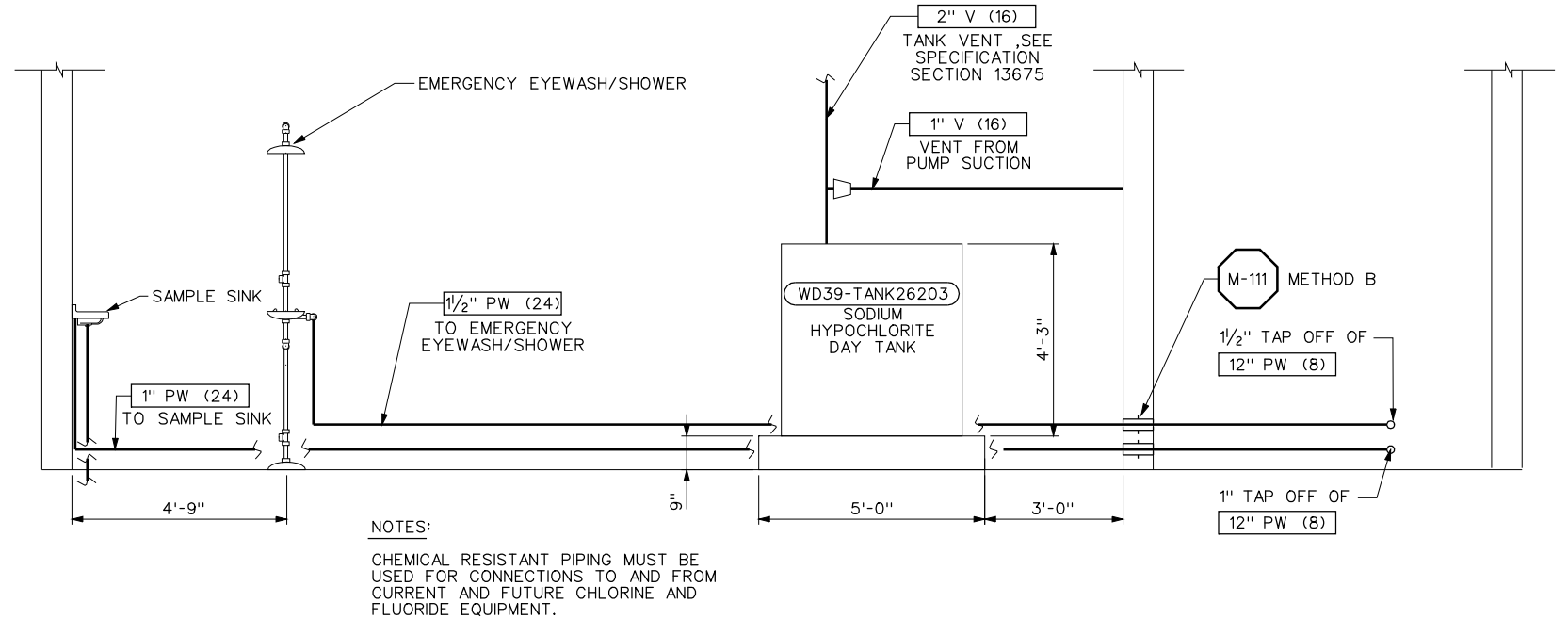


CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

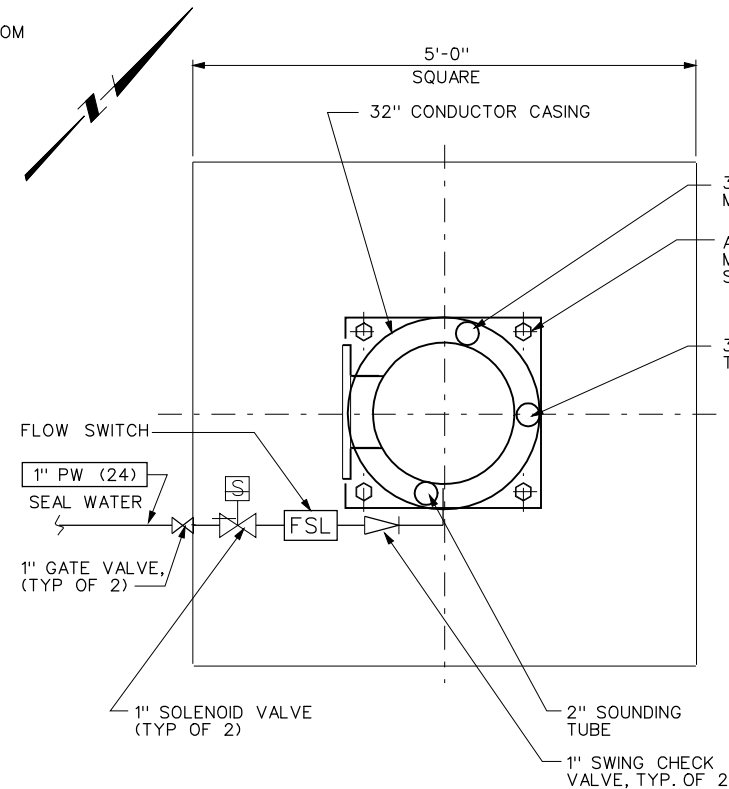
CONFORMED DRAWING  
MECHANICAL PUMP SECTIONS



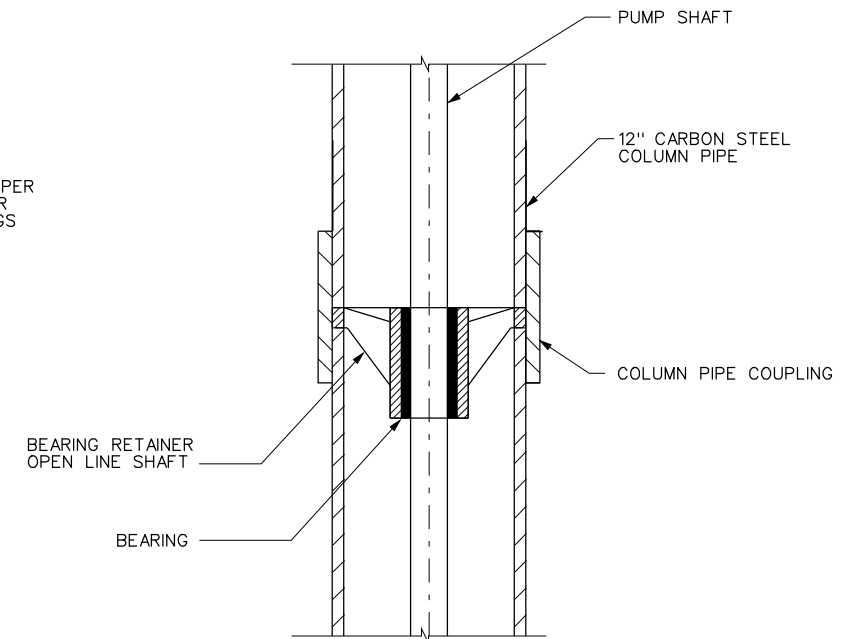
SECTION **B**  
SCALE: 1/2" = 1'-0"



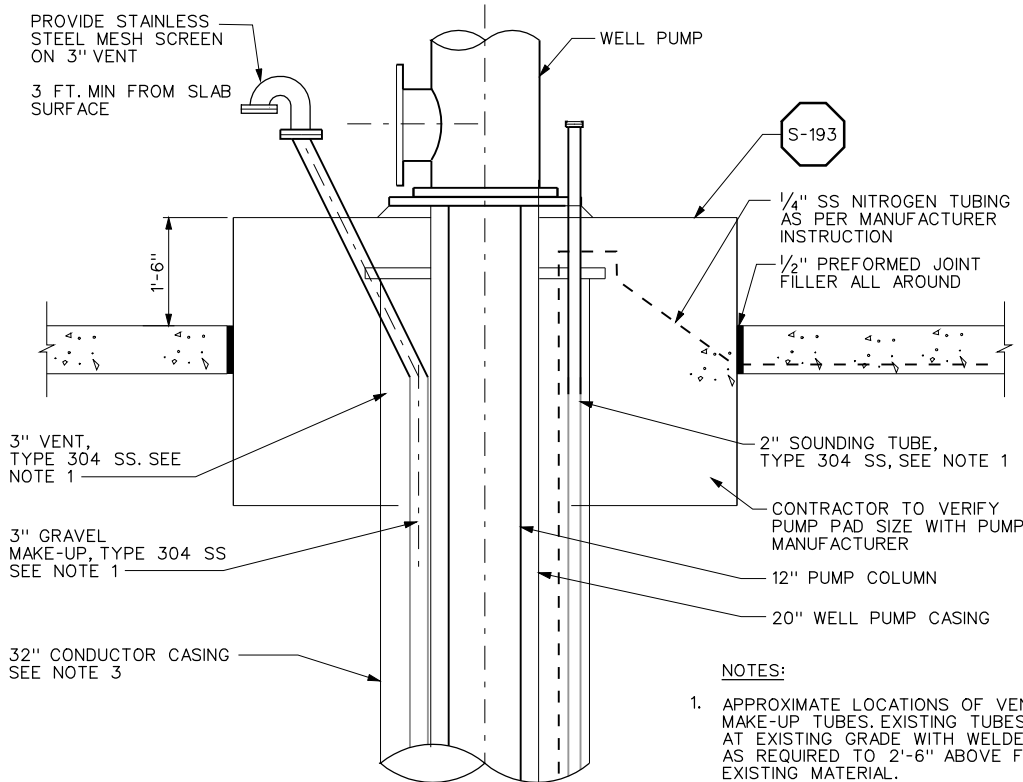
SECTION **D**  
SCALE: 1/4" = 1'-0"



WELLHEAD PLAN **G**  
SCALE: NONE



LINE SHAFT BEARING DETAIL **H**  
SCALE: NONE



WELLHEAD SECTION **F**  
SCALE: NONE

- NOTES:
1. APPROXIMATE LOCATIONS OF VENT, SOUNDING, AND GRAVEL MAKE-UP TUBES. EXISTING TUBES TERMINATE APPROXIMATELY AT EXISTING GRADE WITH WELDED CAPS. EXTEND EACH TUBE AS REQUIRED TO 2'-6" ABOVE FINISHED FLOOR, MATCHING EXISTING MATERIAL.
  2. FOR SOUNDING TUBE, ENSURE THAT THE LEVEL PROBE CAN PASS THRU UNOBSTRUCTED.
  3. CONDUCTOR CASING SHALL EXTEND A MIN. OF 9" INTO CONCRETE FOUNDATION

1	REVISE ALL TAG NUMBERS (ADD. 1)	EAG	3/07
NO.	REVISIONS	BY	DATE

BENCH MARK	
ELEVATION	DATUM
DESCRIPTION	

S. OKASAKI
DRAWN BY: S. OKASAKI
CHECKED BY: J. OSBORN
SCALE:
DATE:
PROJECT NO:



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

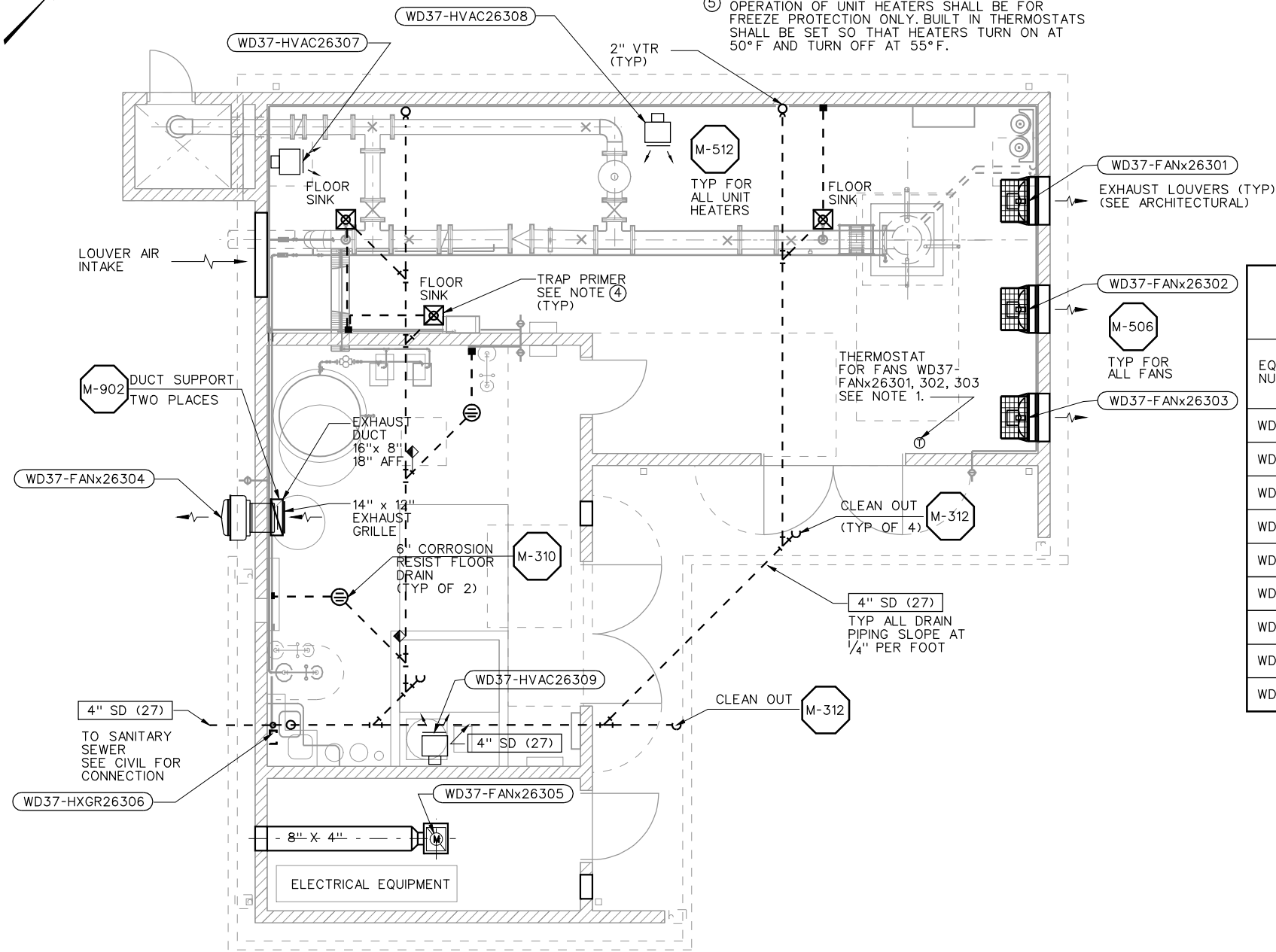
CONFORMED DRAWING  
MECHANICAL SECTIONS AND DETAILS

NOTES

- 1 THERMOSTAT ① CONTROLS WD37-FANx26301, 302, 303. FANS SHALL TURN ON TO LOW SPEED AT 70 F AND OFF AT 65F. FANS SHALL TURN TO HIGH SPEED AT 90F AND BACK TO LOW SPEED AT 85.
- 2 FAN WD37-FANx26304 RUNS CONTINUOUSLY.
- 3 FAN WD37-FANx26305 SHALL RUN CONTINUOUSLY.
- 4 PROVIDE ACCESSIBLE TRAP PRIMERS AND ROUTE 1/2" COPPER PIPE TO FLOOR SINKS & DRAINS. SEE SPECIFICATIONS 15430 FOR INSTALLATION FORMATION
- 5 OPERATION OF UNIT HEATERS SHALL BE FOR FREEZE PROTECTION ONLY. BUILT IN THERMOSTATS SHALL BE SET SO THAT HEATERS TURN ON AT 50°F AND TURN OFF AT 55°F.

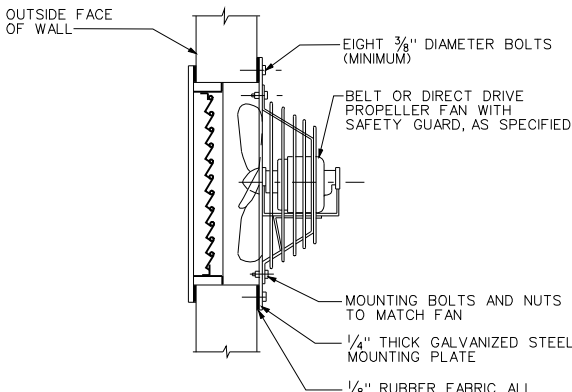
SYMBOL LEGEND

- EXHAUST AIR FLOW  
→ INTAKE AIR FLOW  
① THERMOSTAT  
□ UNIT HEATER



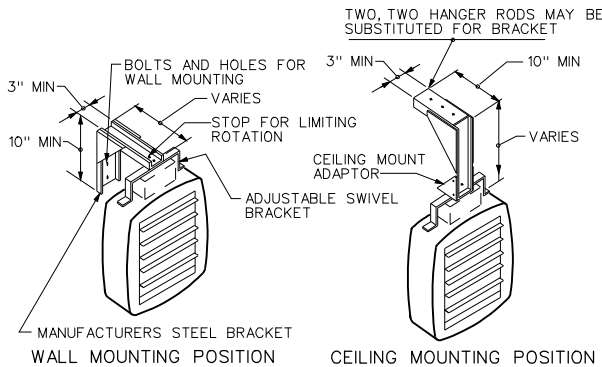
FLOOR PLAN

SCALE: 1/4" = 1'-0"



FAN WITH BACKDRAFT DAMPER

REV 061101



NOTES:

1. HEATER TO BE CONTROLLED FROM WALL-MOUNTED THERMOSTAT, UNLESS OTHERWISE SHOWN.
2. ELECTRIC UNIT HEATER AS SPECIFIED.

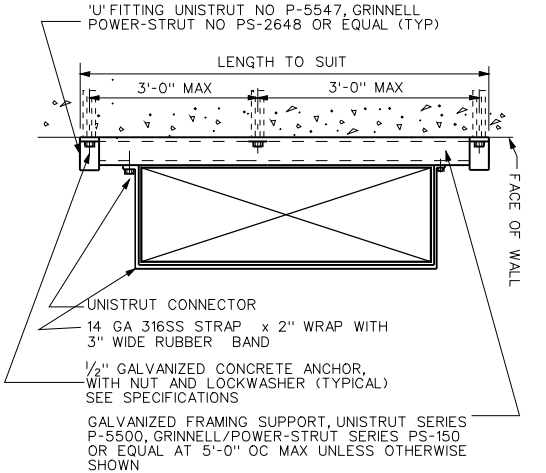
ELECTRIC UNIT HEATER

REV 061101



MISCELLANEOUS MECHANICAL EQUIPMENT SCHEDULE

EQP NUM	LOCATION	SERVICE	TYPE	CFM	SP (IN. W.G.)	HP (MIN)	REMARKS
WD37-FANx26301	WALL PUMP RM	VENTILATION	SIDEWALL EXHAUST FAN	2000/1300	.25	1/4	115 V/60 HZ/1 PH, 1725/1140 RPM 2-SPEED FANS, BELT DRIVE
WD37-FANx26302	WALL PUMP RM	VENTILATION	SIDEWALL EXHAUST FAN	2000/1300	.25	1/4	115 V/60 HZ/1 PH, 1725/1140 RPM 2-SPEED FANS, BELT DRIVE
WD37-FANx26303	WALL PUMP RM	VENTILATION	SIDEWALL EXHAUST FAN	2000/1300	.25	1/4	115 V/60 HZ/1 PH, 1725/1140 RPM 2-SPEED FANS, BELT DRIVE
WD37-FANx26304	CHEMICAL RM	CHEM RM	BELT DRIVE SIDEWALL EXHAUST FAN	600	.125	1/4	115 V/60 HZ/1 PH, 1725/1140 RPM 2-SPEED FANS, BELT DRIVE
WD37-FANx26305	CEILING FAN	ELECTRICAL ROOM	DIRECT DRIVE CEILING FAN	300	.125	1/4	115 V/60 HZ/1 PH, 1725 RPM
WD37-HXGR26306	WATER HEATER	CHEM ROOM SINK	ON DEMAND ELECTRIC HOT WATER HEATER	N/A	N/A	N/A	4.1 KW, 208 VAC/60 HZ/1PH, 19.7A
WD37-HVAC26307	UNIT HEATER	PUMP ROOM	ELECTRIC UNIT HEATER	N/A	N/A	N/A	3 KW, 208 VAC/60 HZ/1PH,
WD37-HVAC26308	UNIT HEATER	PUMP ROOM	ELECTRIC UNIT HEATER	N/A	N/A	N/A	3 KW, 208 VAC/60 HZ/1PH,
WD37-HVAC26309	UNIT HEATER	CHEM ROOM	ELECTRIC UNIT HEATER	N/A	N/A	N/A	3 KW, 208 VAC/60 HZ/1PH,



DUCT SUPPORT

PLAN VIEW

REV 102005



NO.	REVISIONS	BY	DATE
2	CHANGE CLEANOUT DETAIL CALLOUT (ADD. 4)	EAG	4/07
1	REVISE ALL TAG NUMBERS (ADD. 1)	EAG	3/07

BENCH MARK	
ELEVATION	DATUM
DESCRIPTION	

J.OSBORN
DRAWN BY: J.OSBORN
CHECKED BY:
SCALE:
DATE:
PROJECT NO:



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING  
HVAC & PLUMBING  
FLOOR PLAN

H-01

SYMBOLS

PLAN

SINGLE LINE DIAGRAM

SCHEMATIC DIAGRAM

	GROUND BUS
	EXPOSED CONDUIT
	CONDUIT CONCEALED ABOVE FLOOR
	CONDUIT RUN UNDERGROUND OR IN CONCRETE
	EXPOSED CONDUIT RUN BEHIND OBSTRUCTION
	BARE COPPER GROUND TO GROUND WIRE IN SLAB, OR UNDERGROUND GROUND GRID, SIZE AS NOTED.
	UNDERGROUND TELEMETRY CONDUIT
	HOME RUN TO PANEL "49LP-1", CIRCUITS *3, 5 CROSS MARKS INDICATE NUMBER OF CONDUCTORS, LONGER MARK INDICATES NEUTRAL. CONDUCTORS SHALL BE NO. 12 UNLESS OTHERWISE NOTED. CONDUIT SHALL BE 3/4" UNLESS OTHERWISE NOTED. CONDUIT SIZES NOT IDENTIFIED SHALL BE 3/4" MINIMUM WITH 3 *12. "G" INDICATES GROUND WIRE. ALL HOME RUNS TO BE CONCEALED.
	TELEPHONE CONDUIT ONLY UNLESS OTHERWISE NOTED
	CONDUIT RUN - CHANGE IN ELEVATION
	CONDUIT BENDS TOWARD OBSERVER
	CONDUIT BENDS AWAY FROM OBSERVER
	CONDUIT CAPPED, OR SEALED
	FLEXIBLE LIQUID - TIGHT CONDUIT CONNECTION
	C8206 (82M1P12) INDICATES CONDUIT NUMBER C8206 AND CABLE NUMBER 82M1P12
	UNSWITCHED FIXTURE (OR EMERGENCY) FOR NIGHT LIGHT
	CEILING OR PENDANT FIXTURE "2" INDICATES CIRCUIT NUMBER, "A" INDICATES SWITCH DESIGNATION
	WALL MOUNTED FIXTURE
	PHOTO ELECTRIC CONTROL
	POLE MOUNTED FIXTURE, TYPE III DISTRIBUTION. DISTRIBUTION TYPE AS INDICATED ON PLAN
	9'-6" FIXTURE TYPE A. 2-32 WATT LAMPS 3 - NUMBER OF TYPE "A" FIXTURES 9'-6" NUMBER INDICATES APPROX. MOUNTING HEIGHT ABOVE FINISHED FLOOR
	FLUORESCENT LIGHTING FIXTURE, UNSWITCHED (SWITCHED AT LIGHTING PANEL ONLY)
	FLUORESCENT LIGHTING FIXTURE ON EMERGENCY CIRCUIT
	FLUORESCENT LIGHTING FIXTURE ON EMERGENCY CIRCUIT, UNSWITCHED (SWITCHED LIGHTING PANEL ONLY)
	FLUORESCENT LIGHTING FIXTURE ON NORMAL POWER
	EXIT LIGHT AND SIGN
	EMERGENCY LIGHT FIXTURE WITH BATTERY BACK-UP
	SINGLE POLE SWITCH. "a" INDICATES CIRCUIT CONTROLLED
	DOUBLE POLE SWITCH
	THREE-WAY SWITCH
	FOUR-WAY SWITCH
	KEY-OPERATED SWITCH
	MANUAL MOTOR STARTER
	WEATHERPROOF SWITCH
	SWITCH "a" DIMMER CONTROLLED
	PUSHBUTTON SWITCH

WALL	FLOOR	
		120V SINGLE RECEPTACLE, NEMA CONFIGURATION 5-20
		120V DUPLEX RECEPTACLE, NEMA CONFIGURATION 5-20
		240V DUPLEX RECEPTACLE, NEMA CONFIGURATION 6-20
		SINGLE SPECIAL-PURPOSE RECEPTACLE, ASTERISK INDICATES NUMBER, SUCH AS AMPERAGE, TO DIFFERENTIATE BETWEEN TWO OR MORE DIFFERENT TYPES 120 OR 240 V.A.C.
		WELDING RECEPTACLE
		SINGLE SPECIAL PURPOSE RECEPTACLE 480 V.A.C.
		CLOCK HANGER RECEPTACLE
		OCCUPANCY SENSOR
		MOTOR CONTROL CENTER
		LIGHTING PANEL
		POWER PANEL
		FLOOR TYPE TELEPHONE OUTLET
		SOUND OR PAGING SYSTEM DEVICE. * DENOTES NUMBER TO DIFFERENTIATE BETWEEN DIFFERENT DEVICES, "R" - RADIO, "P" - PAGING SPEAKER AND ATTENUATOR
		PUBLIC TELEPHONE SYSTEM DEVICE
		PRIVATE TELEPHONE (ANY TYPE) SYSTEM DEVICE
		CABLE TELEVISION RECEPTACLE
		SMOKE DETECTOR
		GROUND ROD AND GROUND WELL
		GROUND ROD 3/4 " x 10' - 0" (UNLESS OTHERWISE NOTED)
		GROUND CONNECTION BOLTED TYPE
		GROUND CONNECTION - EXOTHERMIC TYPE
		DISCONNECT SWITCH
		COMBINATION MOTOR STARTER AND DISCONNECT SWITCH
		MOTOR
		PUSHBUTTON STATION "SS" START-STOP, "LOS" LOCKOUT-STOP, "LOR" LOCAL-OFF-REMOTE "HOA" HAND-OFF-AUTO
		RACEWAY BOX
		"JB" JUNCTION BOX
		"MH" MANHOLE
		"HH" HANDHOLE
		"PB" PULLBOX
		"TB" TERMINAL BOX
		"JTB" JUNCTION TERMINAL BOX
		JUNCTION BOX OR FITTING
		HEATER
		HORN
		DENOTES REFERENCE TO NOTE 1 I.E. - " SEE NOTE 1 "
		MOTOR OPERATED VALVE
		PASSIVE INFRA-RED MOTION DETECTOR

	BUS
	ACROSS-THE-LINE, NON-REVERSING NEMA SIZE 1 MAGNETIC STARTER
	NEMA SIZE 4 MAGNETIC STARTER: PW - PART WINDING, REV - REVERSING RV - REDUCED VOLTAGE, AUTO-AUTO XFRMR 2SP-2W - TWO SPEED, TWO WINDING RVSS-REDUCED VOLTAGE SOLID STATE
	RVSS
	CONTACTOR, SIZE AS NOTED
	MOLDED CASE CIRCUIT BREAKER, 3 POLE UNLESS OTHERWISE NOTED: 50A.-TRIP RATING IN AMPERE
	NA-NON-AUTOMATIC MCP - MOTOR CIRCUIT PROTECTOR AF-FRAME SIZE (225 AMPS NOTED) AT-TRIP RATING (125 AMPS NOTED)
	MEDIUM OR HIGH VOLTAGE DRAWOUT BREAKER
	DRAWOUT BREAKER, SIZE AS NOTED EO - DENOTES ELECTRICALLY OPERATED
	MEDIUM OR HIGH VOLTAGE STARTER
	SURGE ARRESTOR
	INDUCTION MOTOR, 10 HP NOTED
	WOUND-ROTOR MOTOR, 350HP NOTED
	TRANSFORMER WITH GROUNDED SECONDARY, KVA SIZE & VOLTAGE RATIO AS NOTED
	POTENTIAL TRANSFORMER, RATIO AND NUMBER OF PT'S AS NOTED
	CURRENT TRANSFORMER, RATIO AND NUMBER OF CT'S AS NOTED
	ELECTRICAL INTERLOCK
	ELECTRICAL ENCLOSURE OUTLINE
	KIRK KEY INTERLOCK
	DISCONNECT SWITCH, SIZE AS NOTED
	FUSED DISCONNECT SWITCH
	CAPACITOR, KVAR AS NOTED
	KILOWATTHOUR METER WITH DEMAND REGISTER
	AMMETER
	VOLTMETER
	WATTMETER
	POWER FACTOR METER
	VARMETER
	AMMETER SWITCH
	VOLTMETER SWITCH

	CONTROL RELAY OR COIL
	EXAMPLE TD2 TIME DELAY RELAY NO. 2 CR1 CONTROL RELAY NO.1 M1 STARTER NO.1 MAIN COIL
	N.O. CONTACT
	N.C. CONTACT
	TORQUE SWITCH (SPECIFY WHEN OPEN)
	NORMALLY OPEN LIMIT SWITCH
	NORMALLY CLOSED LIMIT SWITCH
	FLOAT TYPE LIQUID LEVEL SWITCH, CLOSING ON RISING LEVEL
	FLOAT TYPE LIQUID LEVEL SWITCH, OPENING ON RISING LEVEL
	VACUUM OR PRESSURE SWITCH, CLOSING ON RISING PRESSURE
	VACUUM OR PRESSURE SWITCH, OPENING ON RISING PRESSURE
	TEMPERATURE ACTUATED SWITCH: CLOSING ON RISING TEMPERATURE
	TEMPERATURE ACTUATED SWITCH: OPENING ON RISING TEMPERATURE
	FLOW SWITCH (AIR, WATER, ETC.): CLOSING ON FLOW INCREASE
	FLOW SWITCH (AIR, WATER, ETC.): OPENING ON FLOW INCREASE
	NORMALLY OPEN PUSHBUTTON, MOMENTARY CLOSE
	NORMALLY CLOSED PUSHBUTTON, MOMENTARY OPEN, LOS - LOCKOUT STOP
	NO/NC MAINTAINED PUSHBUTTON
	TWO-POSITION SELECTOR SWITCH: H-HAND, M-MANUAL, R-REMOTE, L-LOCAL, A-AUTOMATIC, O-OFF
	THREE-POSITION SELECTOR SWITCH. (SAME AS ABOVE)
	THREE-POSITION SPRING RETURN-TO-CENTER MOMENTARY CONTACT SWITCH ("LATCH-UNLATCH", "ON-OFF", ETC.)
	SINGLE POLE TOGGLE SWITCH ("ON-OFF", ETC.)
	GROUND CONNECTION
	OVERLOAD RELAY CONTACTS (MAGNETIC)
	120V PLUG, NEMA CONFIGURATION 5-20
	MOTOR OPERATOR, PART OF AN ASSEMBLY SUCH AS A VALVE
	SOLENOID, PART OF AN ASSEMBLY SUCH AS A VALVE

	TIMED CONTACTS - CONTACT ACTION DELAYED AFTER COIL IS:
	ENERGIZED
	NORMALLY OPEN WITH TIME DELAY CLOSING
	NORMALLY CLOSED WITH TIME DELAY OPENING
	DE-ENERGIZED
	NORMALLY OPEN WITH INSTANT CLOSING AND TIME DELAY OPENING
	NORMALLY CLOSED WITH INSTANT OPENING AND TIME DELAY CLOSING
	MANUAL MOTOR STARTER WITH OVERLOAD PROTECTION
	FUSE
	RESISTOR (FIXED)
	POTENTIOMETER TYPE RESISTOR (CONTINUOUSLY ADJUSTABLE)
	PUSH-TO-TEST INDICATING LIGHT "R" RED LENS "B" BLUE LENS "A" AMBER LENS "W" WHITE LENS "G" GREEN LENS
	ELAPSED TIME METER
	HEATER
	CROSSING OF CONDUCTORS-NOT CONNECTED
	CONNECTION OF CONDUCTORS, FITTING AS REQUIRED
	DISCONNECT SWITCH
	TERMINATION IN MCC
	FIELD TERMINATION (DEVICES)
	TERMINATION IN CP, OR LCP
	ELECTRODE LEVEL PROBES
	PANEL MOUNTED DEVICE (SCHEMATIC)
	FIELD OR REMOTE MOUNTED DEVICE (SCHEMATIC)
	DEVICE LOCATED IN RTU, OR IN PLC
	VOLTAGE SURGE SUPPRESSOR
	FUSE WITH BLOWN FUSE INDICATOR

NO.	REVISIONS	BY	DATE

BENCH MARK
ELEVATION _____ DATUM _____
DESCRIPTION _____

J. CALTON
DRAWN BY: D. CRITE
CHECKED BY: K. PEARSON
SCALE: NONE
DATE: 10/6/06
PROJECT NO: 1511331



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING	GE-01
ELECTRICAL SYMBOLS	



## ABBREVIATIONS

A	AMPERE, AUTO	GALV	GALVANIZED	N	NEUTRAL	TACH	TACHOMETER
AC	ALTERNATING CURRENT	GEN	GENERATOR	NA	NON-AUTOMATIC	TB	TERMINAL BOX
A/C	AIR CONDITIONING	GFCI	GROUND FAULT CIRCUIT INTERRUPTER	NC	NORMALLY CLOSED	TC	TIME CLOCK, TERMINAL CABINET
AF	AMPERE FRAME SIZE OF CKT. BRKRS.	GRD	GROUND	NO, NOS	NUMBER, NUMBERS, NORMALLY OPEN	TCP	TEMPERATURE CONTROL PANEL
AFF	ABOVE FINISHED FLOOR			NP	NAMEPLATE	TEMP	TEMPERATURE
AL	ALUMINUM	HH	HAND HOLE	NIC	NOT IN CONTRACT	TERM	TERMINAL
AM	AMMETER	HID	HIGH INTENSITY DISCHARGE	NITS	NOT IN THIS SECTION	TH	THERMOSTAT
ANN	ANNUNCIATOR	HIGH	HIGH SPEED CONTACTOR	NTS	NOT TO SCALE	TM	REPEAT CYCLE TIMER
AMP	AMPERES, AMPERAGE	HOA	HAND - OFF - AUTOMATIC			TD	TIME DELAY RELAY
APPR	APPROVED	HP	HORSE POWER	O	OPEN	TDAD	TIME DELAY AFTER DE-ENERGIZED
AS	AMMETER SWITCH, ADJUSTABLE SPEED	HPS	HIGH PRESSURE SODIUM	OC	ON CENTER	TDAE	TIME DELAY AFTER ENERGIZED
AT	AMPERE TRIP	HTR	HEATER	CC	CENTER TO CENTER	TS	TEMPERATURE SWITCH
ATS	AUTOMATIC TRANSFER SWITCH	HVAC	HEATING VENTILATION AIR CONDITIONING	OL	OVERLOAD RELAY	TYP	TYPICAL
AUTO	AUTOMATIC	HZ	HERTZ	OS	OCCUPANCY SENSOR	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
AWG	AMERICAN WIRE GAUGE			P	POLE	UG	UNDERGROUND
BATT	BATTERY	IMC	INTERMEDIATE METALLIC CONDUIT	PB	PUSHBUTTON, PULL BOX	UH	UNIT HEATER
BC	BARE COPPER	INCAND	INCANDESCENT	PCM	PROCESS CONTROL MODULE	V	VOLTAGE, VOLTS
BKR	BREAKER	IND	INDICATION (SYSTEM)	PF	POWER FACTOR	VAR	VAR METER
BBL	BUBBLER	I/O	INPUT/OUTPUT	PH, Ø	PHASE	VFD	VARIABLE FREQUENCY DRIVE
BLDG	BUILDING	INST	INSTANTANEOUS (TD CONTACT)	PMP	PUMP	VM	VOLTMETER
C	CONDUIT, CLOSED	INSTR	INSTRUMENT	PNL	PANEL	VP	VAPORPROOF
CAB	CABINET	Isc	SHORT CIRCUIT CURRENT, AMPS	PNLBD	PANELBOARD	VS	VARIABLE SPEED, VOLTMETER SWITCH
CB	CIRCUIT BREAKER	INVT	INVERT	POS	POSITION	VT	VOLTAGE TRANSFORMER
CKT	CIRCUIT	ISO	ISOLATION (TRANSFORMER)				
CLF	CURRENT LIMITING FUSE			POT	POTENTIOMETER	W	WATTS, WIRE
CO	CONDUIT ONLY	JB	JUNCTION BOX	PRI	PRIMARY	WHD	WATTHOUR DEMAND METER
COND	CONDUIT	J BOX	JUNCTION BOX	PS	PRESSURE SWITCH	WHM	WATTHOUR METER
COMM	COMMUNICATION			PT	POTENTIAL TRANSFORMER	WP	WEATHERPROOF
COMPT	COMPARTMENT	KAIC	KILOAMP INTERRUPTING AND WITHSTAND CAPACITY	PVC	POLYVINYL CHLORIDE	WT	WATERTIGHT
COMPR	COMPRESSOR	KI	KEY INTERLOCK	PW	PART WINDING		
CP	CONTROL PANEL	KVA	KILO (1000) VOLT AMPS	PWR	POWER	XD	TRANSDUCER
CPT	CONTROL POWER TRANSFORMER (IN INDIVIDUAL STARTER CUBICLE)	KW	KILOWATTS	R, REM	REMOTE	XFMR	TRANSFORMER
CR	CONTROL RELAY (MAGNETICALLY HELD)	KWH	KILOWATT HOUR	REC	RECEPTACLE	XMTR	TRANSMITTER
CRE	CORROSION RESISTANT			RECPTS	RECEPTACLES		
CT	CURRENT TRANSFORMER	LC	LIGHTING CONTACTOR	REQ'D	REQUIRED		
CU	COPPER	LCB	LOCAL CONTROL BOARD	REV	REVERSE CONTACTOR COIL		
DC	DIRECT CURRENT	LCP	LOCAL CONTROL PANEL	RGS	RIGID GALVANIZED STEEL		
DDC	DISTRIBUTED DIGITAL CONTROLLER	LOC	LOCAL	RSG	RIGID GALVANIZED STEEL		
DISC, DS	DISCONNECT	LOR	LOCAL- OFF- REMOTE	RUN	RUN CONTACTOR COIL		
DISTR	DISTRIBUTION	LOS	PUSHBUTTON W/"LOCK-OUT-STOP"	RTU	REMOTE TERMINAL UNIT		
DPDT	DOUBLE POLE DOUBLE THROW	LS	LEVEL SWITCH	RVNR	REDUCED VOLTAGE NON-REVERSING		
DWG	DRAWING	LT, LTS	LIGHT, LIGHTS	SCH	SCHEDULE		
		LTG	LIGHTING	SEC	SECONDS, SECONDARY		
E	EMPTY, EMERGENCY	LOW	LOW SPEED CONTACTOR	SECT	SECTION		
ELEV	ELEVATION	M	MOTOR CONTACTOR COIL	SEL SW	SELECTOR SWITCH		
EMERG	EMERGENCY	MA	MILLIAMPS	SEQ	SEQUENCE		
EMT	ELECTRICAL METALLIC TUBING	MAN	MANUAL	SHLD	SHIELDED		
ENCL	ENCLOSURE	MAG	MAGNETIC	SHT	SHEET		
EO	ELECTRICALLY OPERATED	MAX	MAXIMUM	SIG	SIGNAL		
EP	EXPLOSION PROOF	MCC	MOTOR CONTROL CENTER	S1, S2	START CONTACTOR COILS		
EQPT	EQUIPMENT	MCB	MAIN CONTROL BOARD	SP	SPARE		
ER	CONDUCTANCE LEVEL RELAY	MCM	THOUSAND CIRCULAR MILS	SPDT	SINGLE POLE DOUBLE THROW		
ETM	ELAPSED TIME METER	MD	MOTORIZED DAMPER	SPECS	SPECIFICATIONS		
EXH	EXHAUST	MH	MANHOLE	SP HTR	SPACE HEATER		
EXIST	EXISTING	MIN	MINUTES, MINIMUM	SPST	SINGLE POLE SINGLE THROW		
F, ~	FREQUENCY	MLO	MAIN LUGS ONLY	ST, SH	SHUNT TRIP		
FDR	FEEDER	MOV	MOTOR OPERATED VALVE	STA	STATION		
FLEX	FLEXIBLE	MS	MANUAL MOTOR STARTER	STD	STANDARD		
FLN	FIBER OPTIC LINK NETWORK	MT, MTD	MOUNT, MOUNTED	STL	STEEL		
FLUOR	FLUORESCENT	MTR	MOTOR	STR	STARTER		
FLT	FAULT	MUX	MULTIPLEXING PANEL	SV	SOLENOID VALVE		
FM	FREQUENCY METER			SW	SWITCH		
FOC	FIBEROPTIC CABLE			SYS	SYSTEM		
FUT	FUTURE						
FVR	FULL VOLTAGE REVERSING						
FVNR	FULL VOLTAGE NON-REVERSING						
FWD	FORWARD CONTACTOR COIL						

## DEVICE LIST

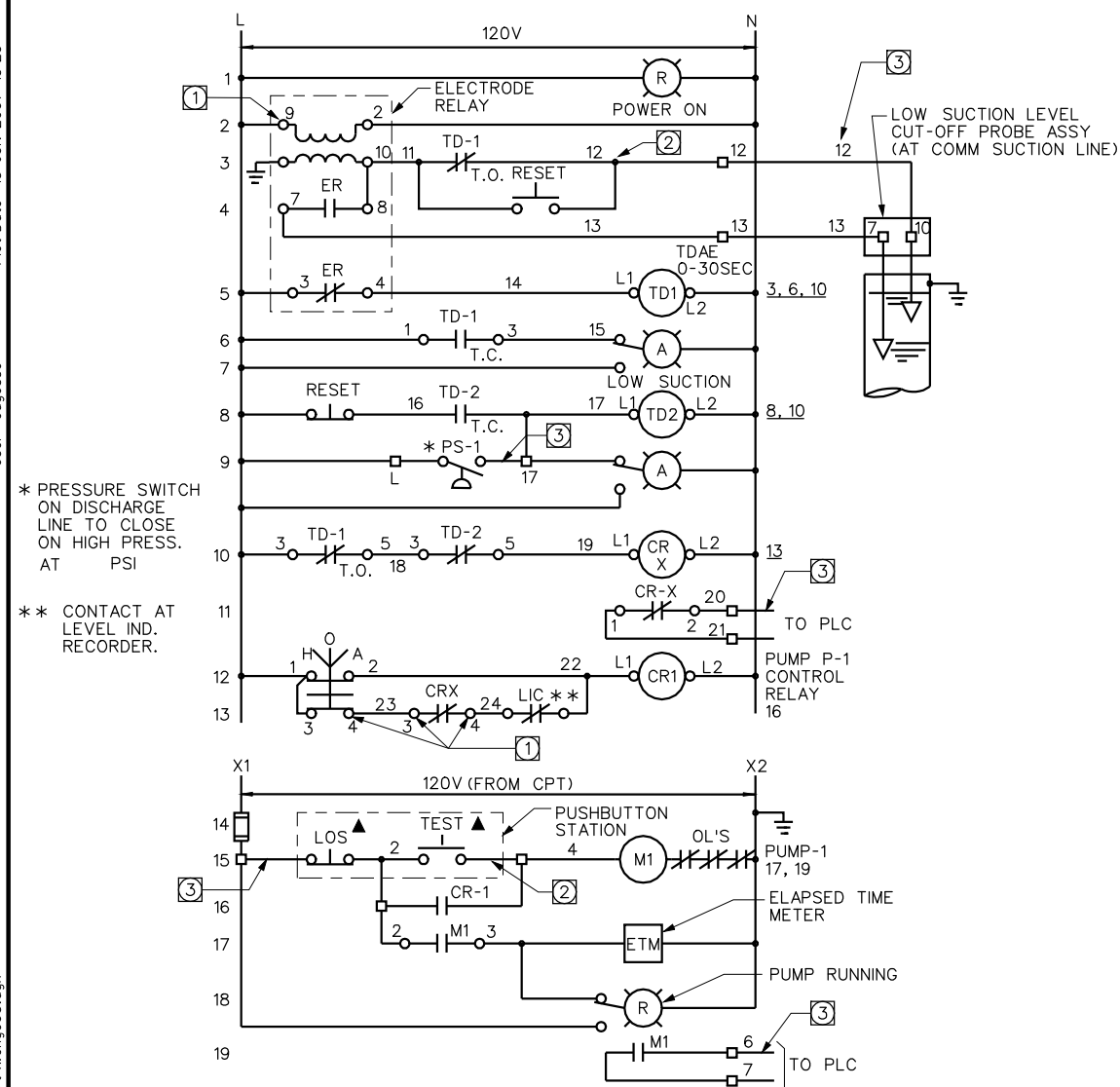
FUNCTION	DESCRIPTION	FUNCTION	DESCRIPTION
25B	SYNC CHECK RELAY	51G	TIME OVERCURRENT GROUND RELAY
27	UNDERVOLTAGE RELAY	51N	TIME OVERCURRENT GROUND FAULT RESIDUAL RELAY
27/47	UNDERVOLTAGE/PHASE SEQUENCE	52	CIRCUIT BREAKER
32	REVERSE POWER PROTECTIVE RELAY	52CS	CIRCUIT BREAKER CONTROL SWITCH, "TRIP""CLOSE" SPRING RETURN TO NORMAL
43	TRANSFER MODE SELECTOR SWITCH "MANUAL","AUTO" MAINTAINED	59	OVERVOLTAGE
43T	CONTROL SWITCH "TEST", "NORMAL" MAINTAINED	59N	GROUND FAULT OVERVOLTAGE RELAY
49	TEMPERATURE RELAY FURNISHED WITH TRANSFORMER	63	SUDDEN PRESSURE RELAY FURNISHED WITH TRANSFORMER
50	INSTANTANEOUS OVERCURRENT RELAY	63X	AUXILIARY RELAY
50G	INSTANTANEOUS OVERCURRENT GROUND RELAY	67	DIRECTIONAL CURRENT RELAY
50N	INSTANTANEOUS OVERCURRENT GROUND RELAY	71	LIQUID LEVEL RELAY FURNISHED WITH TRANSFORMER
51	TIME OVERCURRENT RELAY	83	AUTOMATIC SELECTIVE CONTROL RELAY
		86	LOCK-OUT RELAY
		87T	TRANSFORMER DIFFERENTIAL RELAY

## GENERAL NOTES

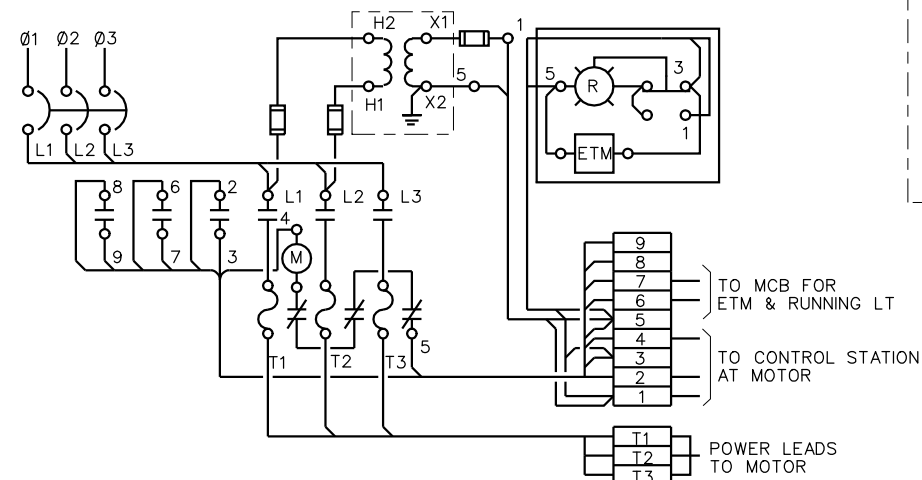
1. THE DRAWINGS DIAGRAMMATICALLY INDICATE THE DESIRED LOCATION AND ARRANGEMENT OF OUTLETS, EQUIPMENT, AND OTHER ITEMS. EXACT LOCATIONS SHALL BE DETERMINED BY THE CONTRACTOR IN THE FIELD BASED ON THE PHYSICAL SIZE AND ARRANGEMENT OF EQUIPMENT, FINISHED ELEVATIONS, AND OTHER OBSTRUCTIONS. IF CONDUIT HOME RUNS ARE SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL ROUTE THE CONDUITS AT HIS DISCRETION, BASED ON FIELD CONDITIONS AND SPECIFIC INSTALLATION REQUIREMENTS SPECIFIED HEREIN. ALL EQUIPMENT WIRING SHALL BE IN ACCORDANCE WITH THE SINGLE LINE DIAGRAMS, CONTROL AND BLOCK DIAGRAMS, PANEL SCHEDULES, AND ELECTRICAL CABLE AND CONDUIT SCHEDULE DRAWINGS. THE CONTRACTOR SHALL PROVIDE ALL DETAILED CONSTRUCTION ENGINEERING, LAYOUT AND DESIGN TO DELIVER A SAFE, OPERATIONAL SYSTEM DESCRIBED OR INDICATED IN THE CONTRACT DOCUMENTS COMBINING WITH APPLICABLE CODES AND LAWS.
  2. THE CONTRACTOR SHALL VERIFY EXACT LOCATION OF TERMINAL BOXES AND CONDUIT ENTRANCES OF ALL EQUIPMENT AGAINST SHOP DRAWINGS BEFORE STUBBING UP CONDUITS.
  3. CONDUIT FOR FUTURE EQUIPMENT SHALL BE TERMINATED AS SHOWN IN DETAIL OR AS SPECIFIED.
  4. CONNECTION BETWEEN RIGID CONDUIT AND MOTOR TERMINAL BOX SHALL BE FLEXIBLE LIQUID-TIGHT CONDUIT.
  5. EXPOSED FLEXIBLE CONNECTIONS SHALL BE FLEXIBLE LIQUID-TIGHT CONDUIT WITH APPROVED GROUNDING TYPE FITTINGS AND SHALL NOT EXCEED 30" IN LENGTH FOR 2" SIZE AND LARGER. MAXIMUM OF 18" FOR SIZES 1 1/2" AND SMALLER.
  6. CONDUITS TERMINATING AT SWITCHGEAR, MOTOR CONTROL CENTER, POWER PANELS, CONTROL CABINETS, ETC. SHALL BE EQUIPPED WITH A GROUNDING BUSHING 'OZ' TYPE 'GB' AND GROUNDED AS A BANK WITH NO. 2 GROUND WIRE.
  7. CONDUITS STUB-UPS SHALL NOT BE MORE THAN 6" FROM CENTER LINES OF TERMINAL BOXES.
  8. MOTOR CONTROL CENTERS, SWITCHBOARDS, SWITCHGEAR AND ALL FREE STANDING PANELS SHALL BE SET ON CONCRETE PAD AND LEVELING CHANNELS EMBEDDED IN PAD AS SHOWN IN MCC PANEL, UNLESS OTHERWISE INDICATED.
  9. IN CASE OF INTERFERENCE BETWEEN ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS AND OTHER EQUIPMENT, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING AND THE ENGINEER SHALL REVIEW THE PROPOSED CHANGES BEFORE THEY ARE MADE.
  10. ALL OUTDOOR DEVICES SHALL BE WEATHERPROOF.
  11. LOCATION OF PULLBOXES ARE APPROXIMATE. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF PULLBOXES WITH MECHANICAL PIPING.
  12. ONLY MAJOR PULL BOXES ARE SHOWN. CONTRACTOR SHALL PROVIDE ADDITIONAL PULLBOXES WHERE THEY ARE REQUIRED TO MAKE A WORKABLE INSTALLATION.
  13. CIRCUITS OF DIFFERENT SERVICE VOLTAGE SHALL BE INSTALLED IN SEPARATE RACEWAYS, PULLBOXES, AND MANHOLES, HANDHOLES, JUNCTION BOXES. THE VOLTAGE AND SERVICE LEVELS ARE:
    - ① MEDIUM VOLTAGE >600 V
    - ② LOW VOLTAGE 120 - 480 V
    - ③ INSTRUMENTATION & COMMUNICATION
- THE MINIMUM COVER OF EACH DUCT BANK SHALL BE 30 INCHES.
14. GENERAL DETAILS APPLY TO ALL TYPICAL INSTALLATIONS, WHETHER DETAIL IS SPECIFICALLY CALLED OUT OR NOT.

				BENCH MARK		J. CALTON						CITY OF ROSEVILLE ENVIRONMENTAL UTILITIES DEPARTMENT  WOODCREEK NORTH PUMP STATION 8301 WOODCREEK OAKS BLVD. ROSEVILLE		CONFORMED DRAWING		GE-02	
				ELEVATION _____ DATUM _____		DRAWN BY: MWH											
				DESCRIPTION _____		CHECKED BY: K. PEARSON											
						SCALE: NONE											
						DATE: 10/6/06											
								PROJECT NO: 1511331									
NO.	REVISIONS			BY	DATE												

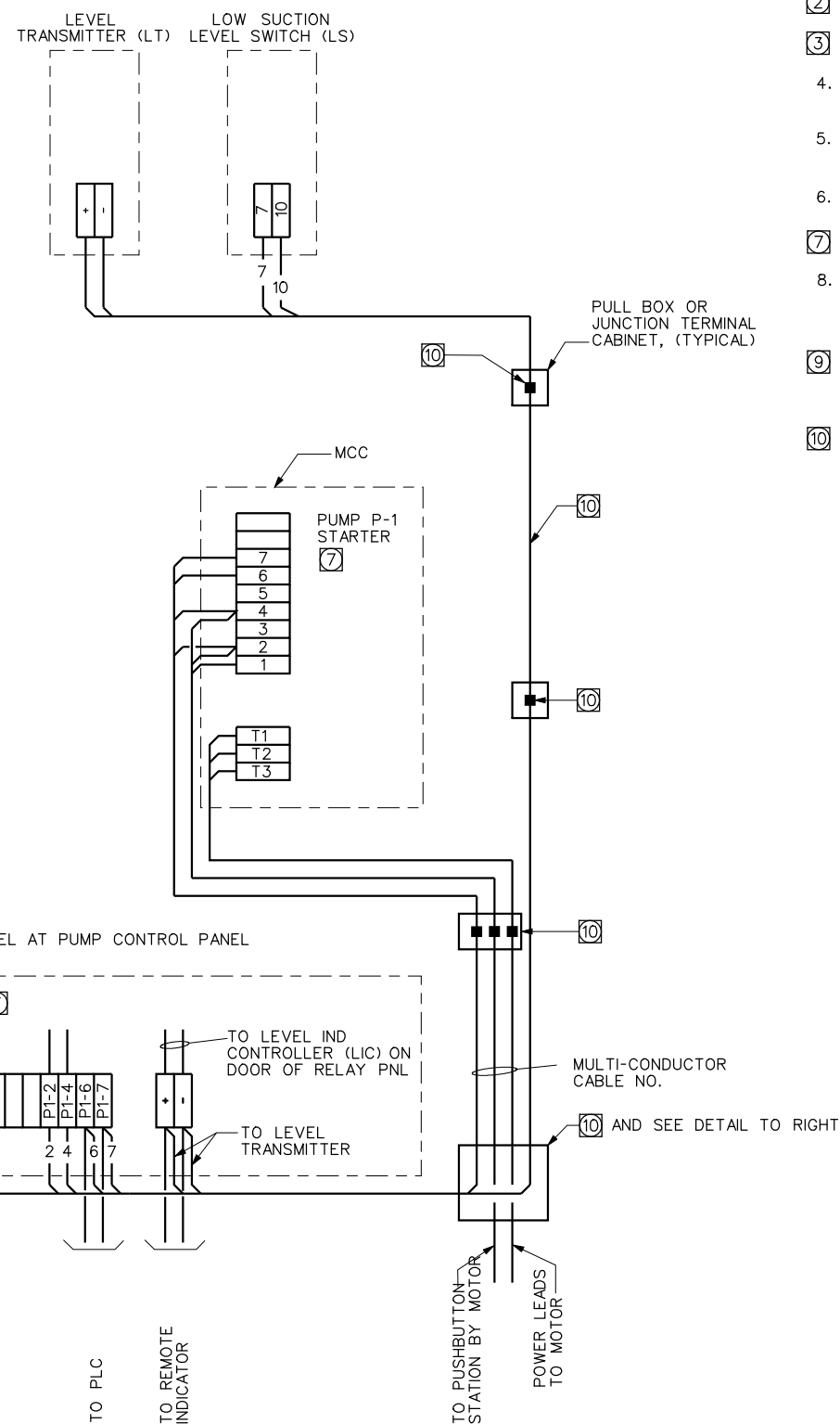




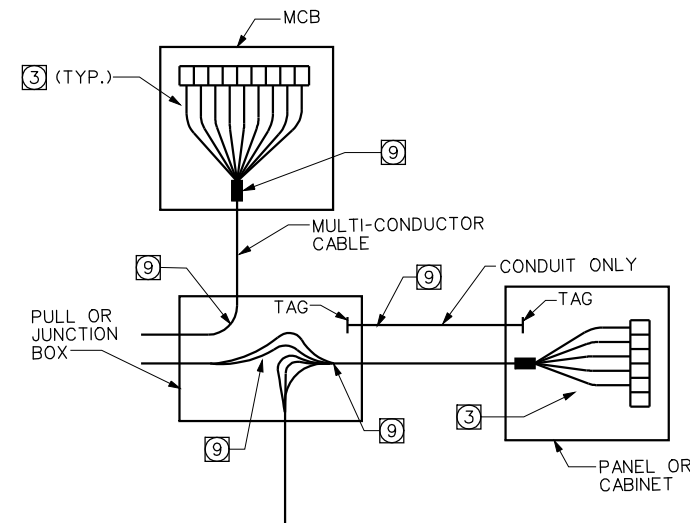
PUMP P-1 CONTROL DIAGRAM  
AS SHOWN ON APPROVED SHOP DRAWINGS



PUMP P-1 STARTER WIRING DIAGRAM  
TO BE SHOWN ON SHOP DRAWINGS



INTERCONNECTION DIAGRAM  
AS REQUIRED BY SPECIFICATION DIVISION 16



## DETAIL

## FIELD WIRE/CABLE AND CONDUIT IDENTIFICATION IN PULL/JUNCTION BOXES AND CABINETS

NOTES:

- ① STANDARD WIRE OR TERMINAL NUMBER ON EQUIPMENT TO BE SHOWN ON MANUFACTURER'S CATALOG SHEET-FURNISHED WITH SHOP DRAWINGS.
- ② WIRE NUMBER AS SHOWN ON CONTRACT DRAWINGS OR AS DESIGNATED BY PANEL SUPPLIER (MANUFACTURER), TO BE SHOWN ON SHOP DRAWINGS.
- ③ WIRE NUMBERS SHALL BE SHOWN ON ALL SUBMITTALS AND 'AS BUILT DRAWINGS'.
4. WHENEVER AN ITEM IS CALLED AS 'SIMILAR', 'TYPICAL' OR 'AS REQUIRED', THE SHOP DRAWINGS SHALL SHOW AND IDENTIFY ALL SUCH ITEMS, COMPLETE, IN SCHEMATIC AND WIRING DIAGRAMS.
5. ARRANGEMENT OF COMPONENTS OR DEVICES ON THE FRONT PANEL SHALL BE AS SHOWN ON EQUIPMENT ELEVATION DRAWINGS, OR AS DESCRIBED IN THE CONTRACT SPECIFICATIONS IF NOT SHOWN.
6. REFER TO CONTRACT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS IN SHOP DRAWING SUBMITTALS.
- ⑦ DRAWING CROSS REFERENCES SHALL BE SHOWN BY CONTRACTOR ON AS-BUILTS.
8. INTERCONNECT DRAWINGS SHALL BE AS-BUILT FOR EVERY ELECTRICAL CONNECTION. INTERCONNECT AS-BUILTS TO INCLUDE EVERY INSTRUMENT, MOTOR, VALVE, FIELD DEVICE, ANALYZER, TRANSMITTER, MCC, PANELBOARD AND CONTROL PANEL.
- ⑨ IDENTIFICATION NUMBERS, SUCH AS CONDUIT NUMBERS, LOOP NUMBERS, PULLBOX NUMBERS AND INSTRUMENT NUMBERS, WHICH ARE GIVEN ON THE CONTRACT DRAWINGS SHALL BE USED FOR IDENTIFICATION ON THE INTERCONNECTION DIAGRAM.
- ⑩ CABLE NUMBERS AND CONDUIT NUMBERS SHALL BE INSTALLED WITHIN PULL BOXES AND ELSEWHERE AS REQUIRED BY SPECIFICATIONS AND THIS DRAWING.

### SAMPLE DIAGRAMS-

NO.	REVISIONS	BY	DATE

BENCH MARK	ELEVATION _____ DATUM _____
	DESCRIPTION _____
	_____
	_____
	_____

	J. CALTON
DRAWN BY:	MWH
CHECKED BY:	K. PEARSON
SCALE:	NONE
DATE:	10/6/06
PROJECT NO:	1511331

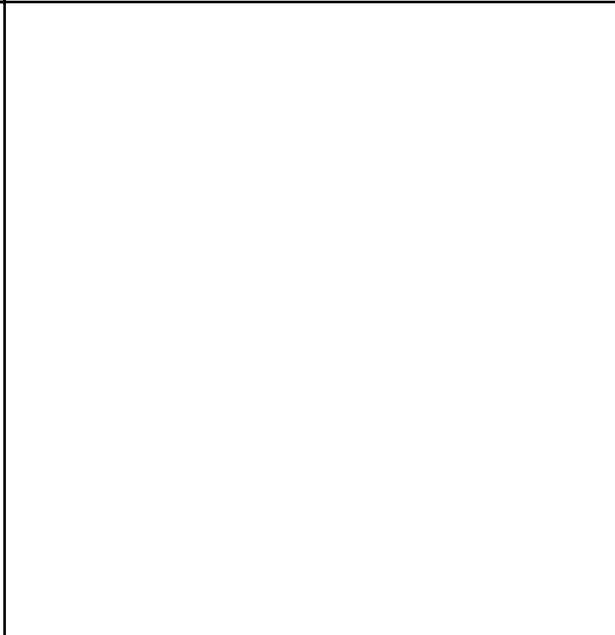
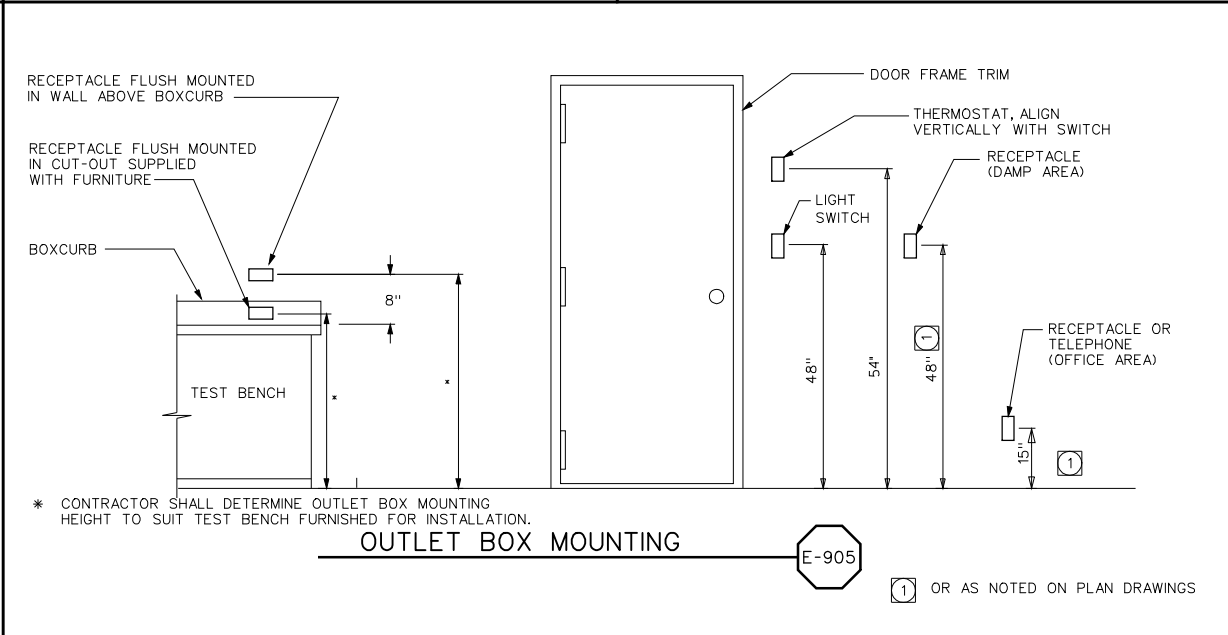
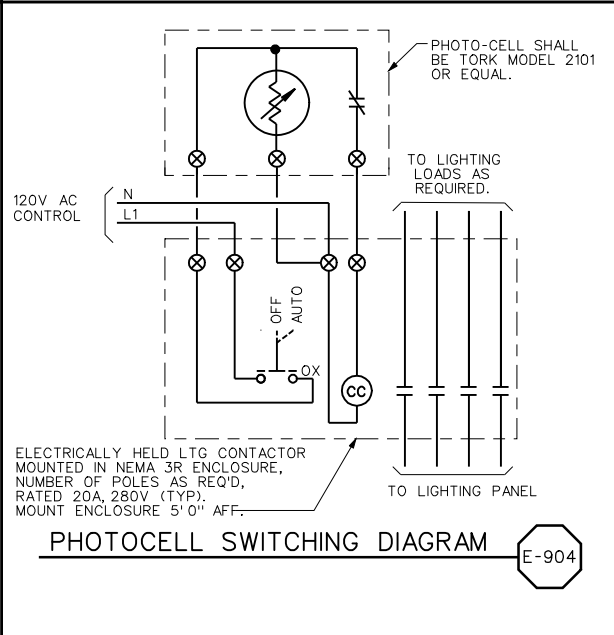
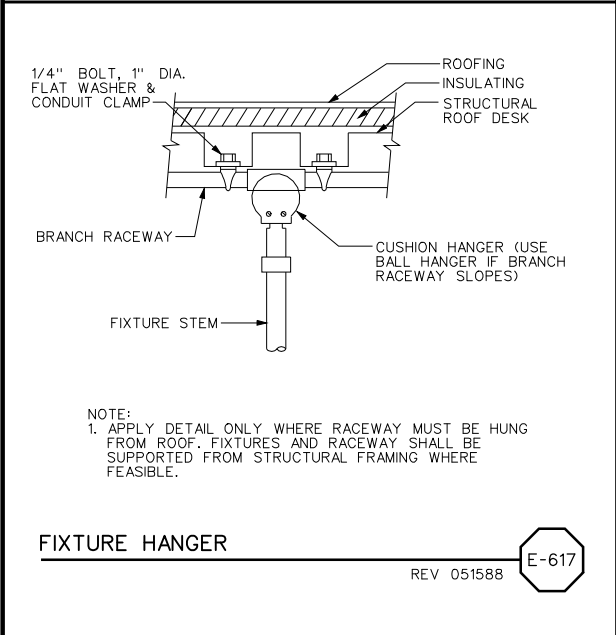
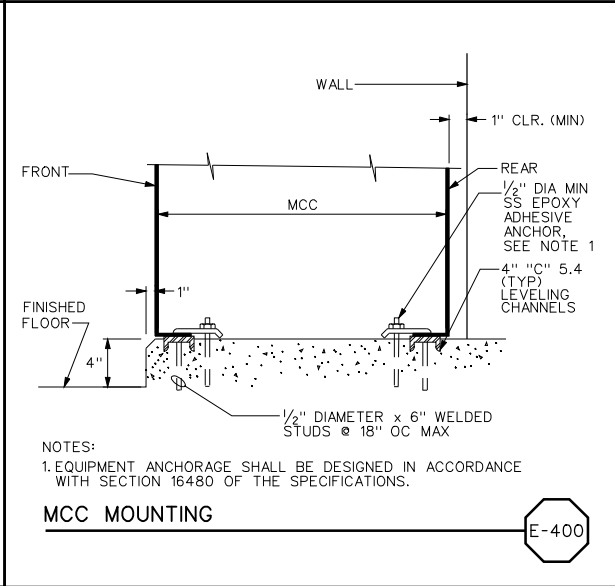
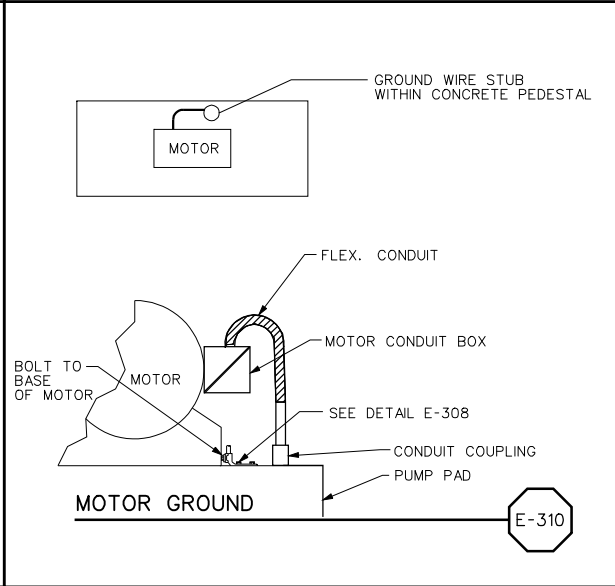
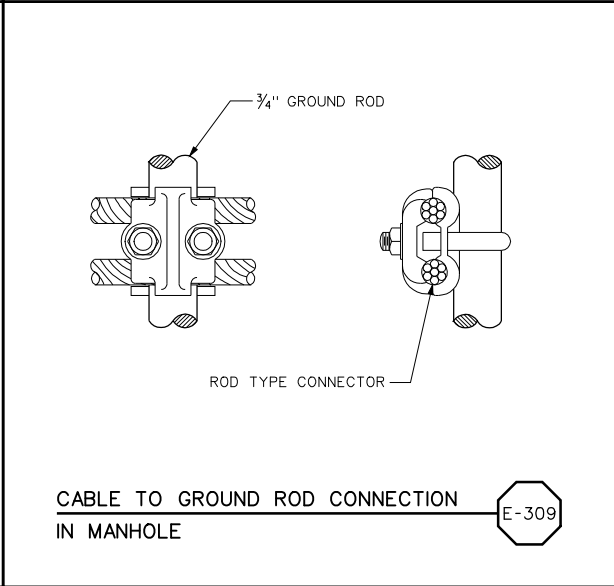
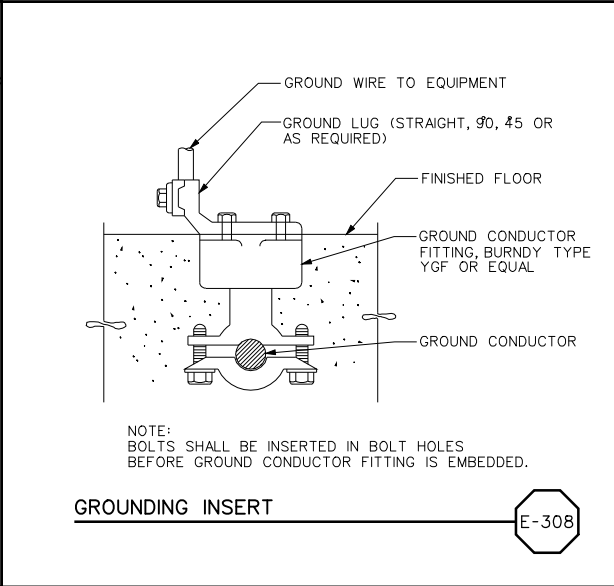
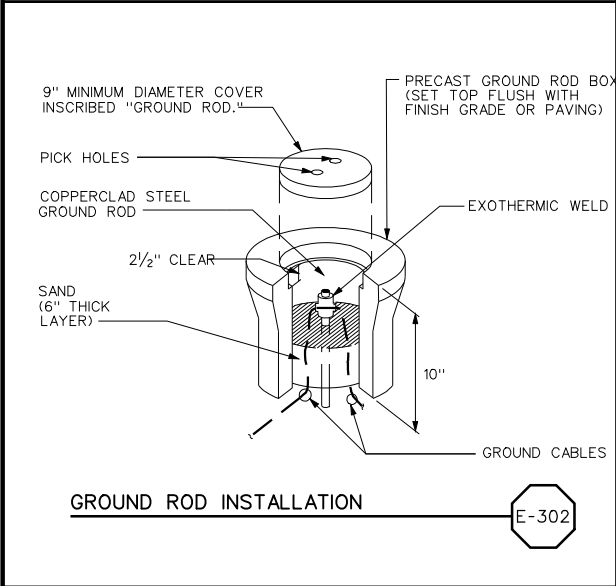
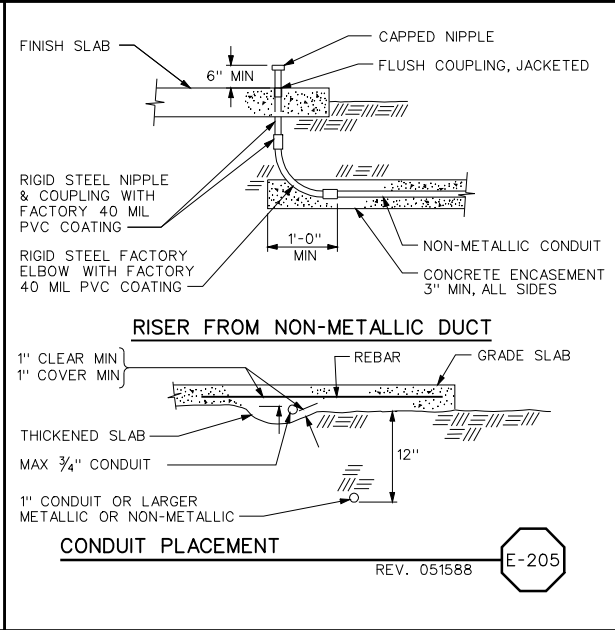
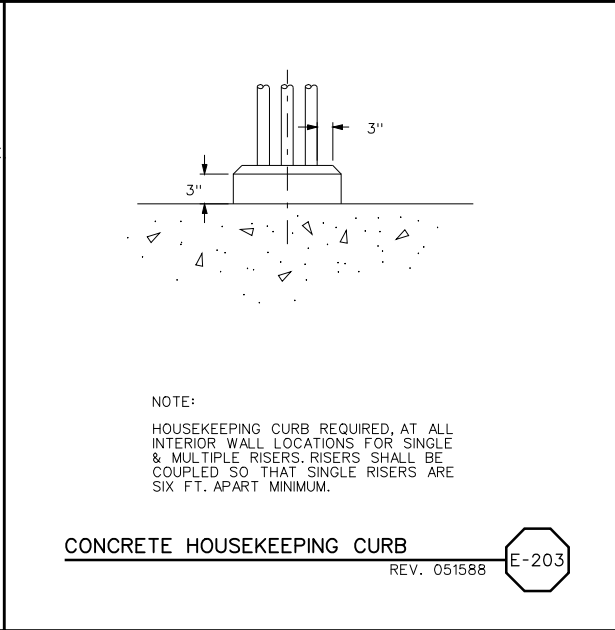
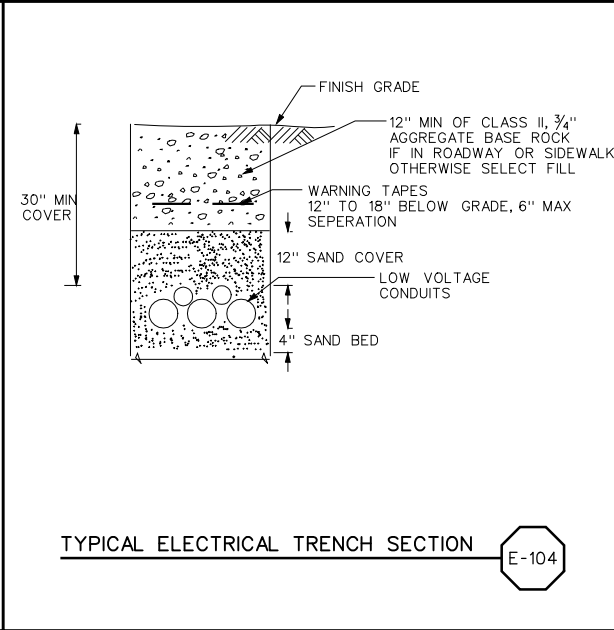
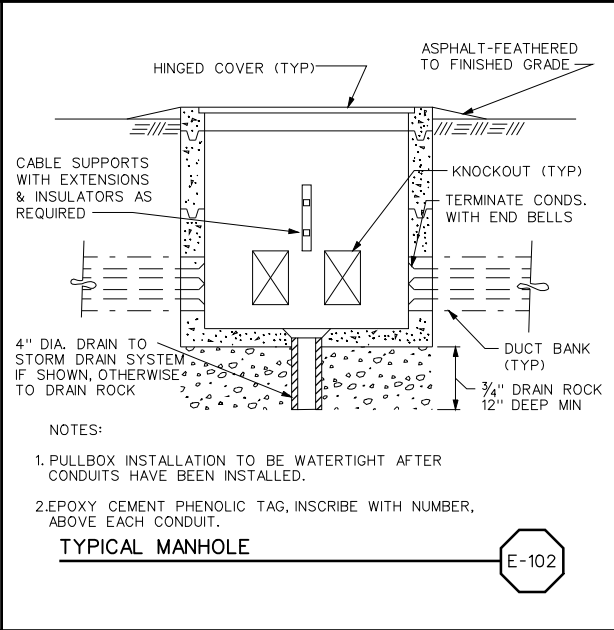
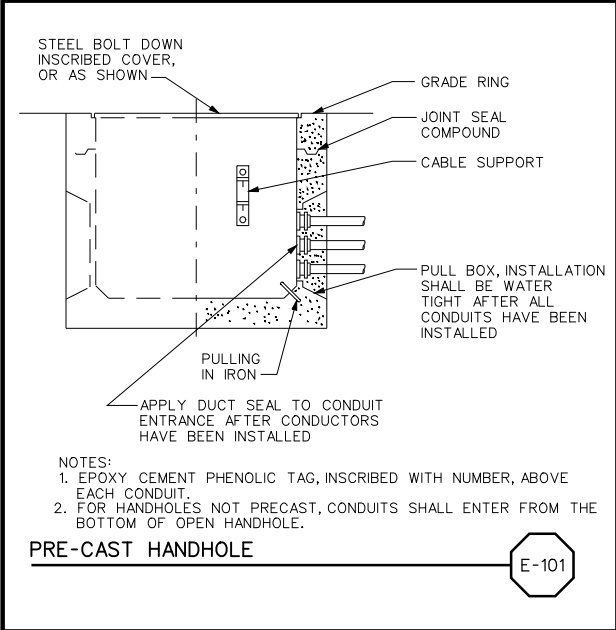


CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING

ELECTRICAL  
SAMPLE AS-BUILTS

GE-03



NO.	REVISIONS	BY	DATE

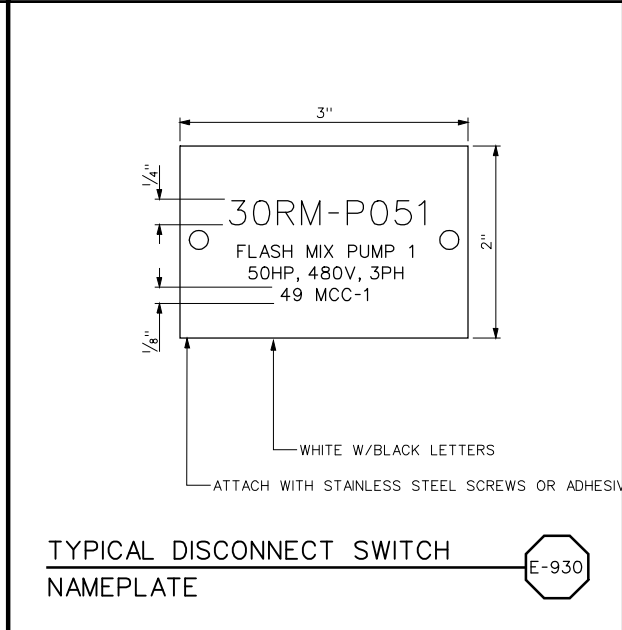
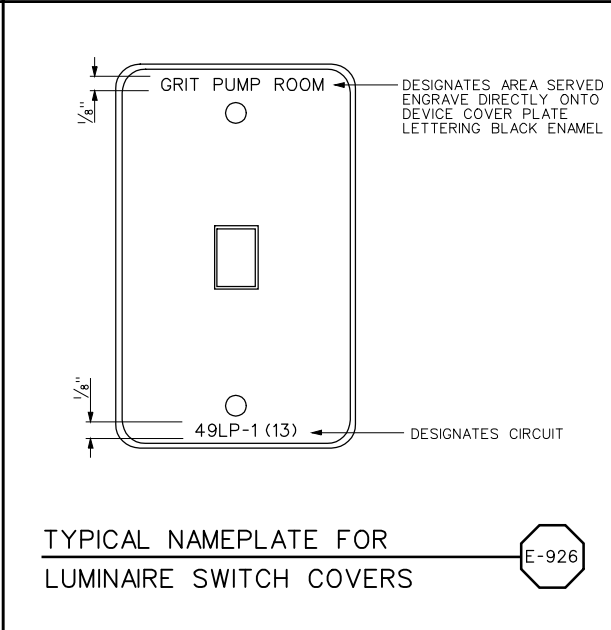
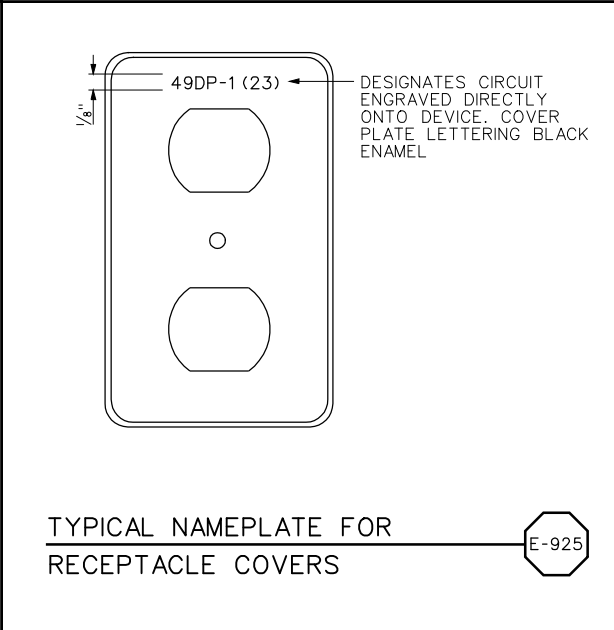
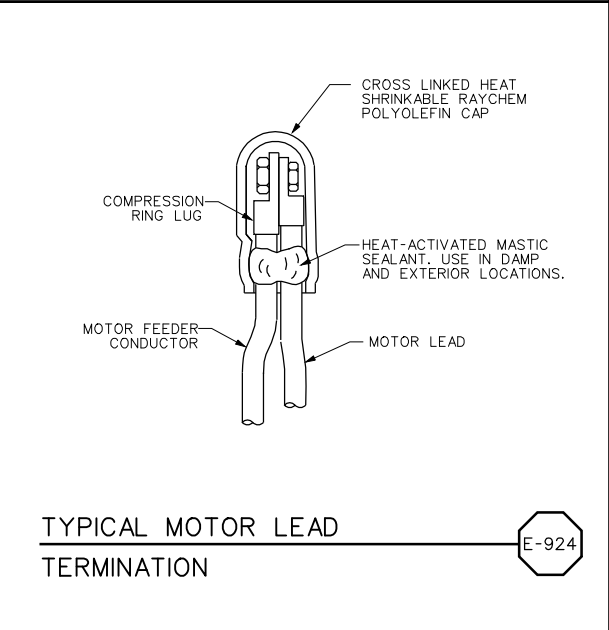
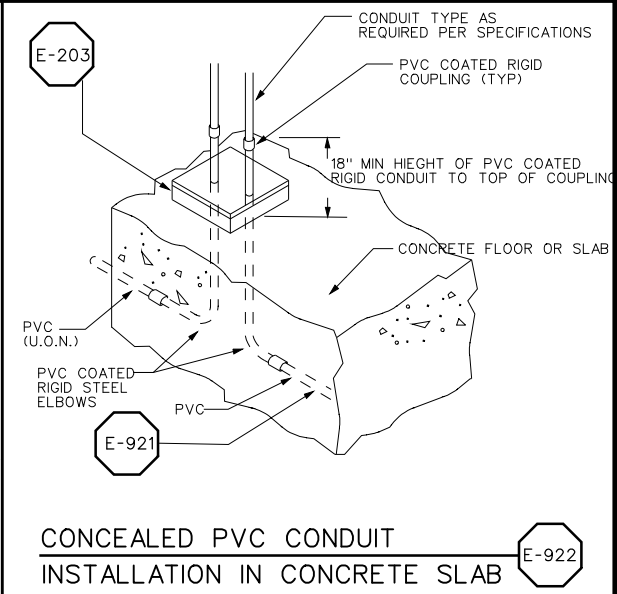
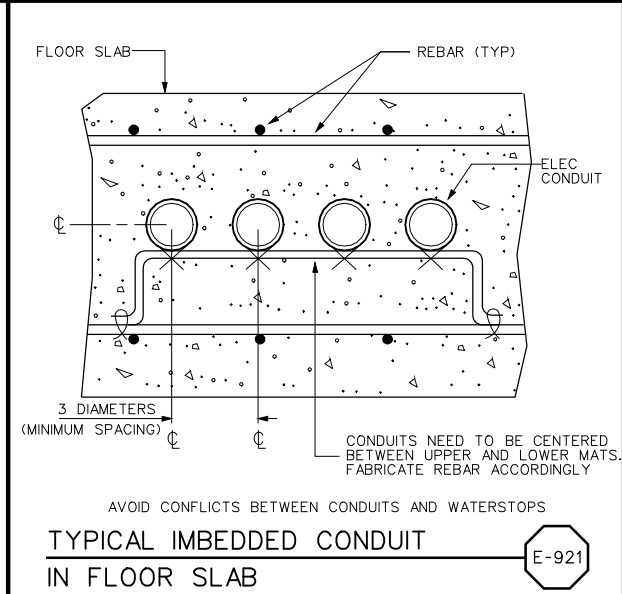
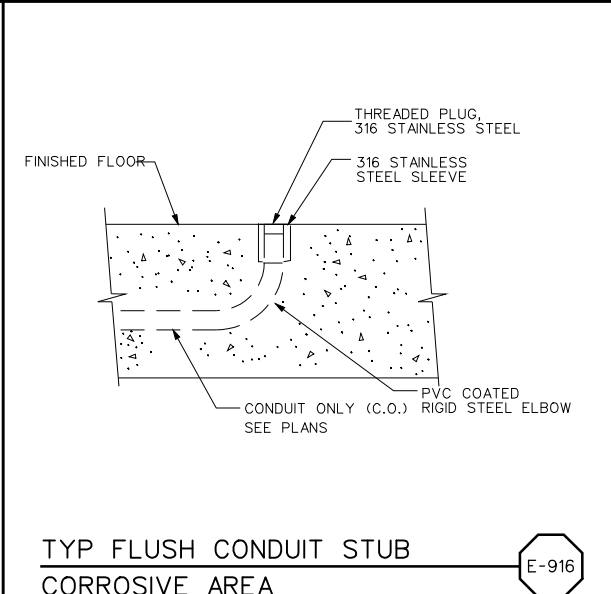
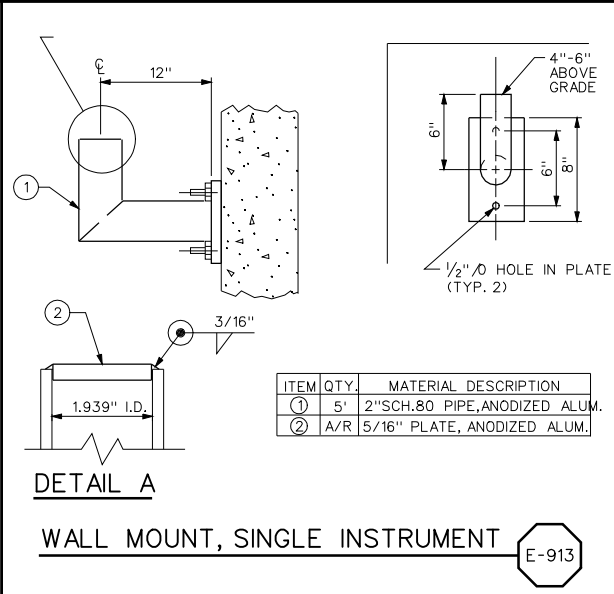
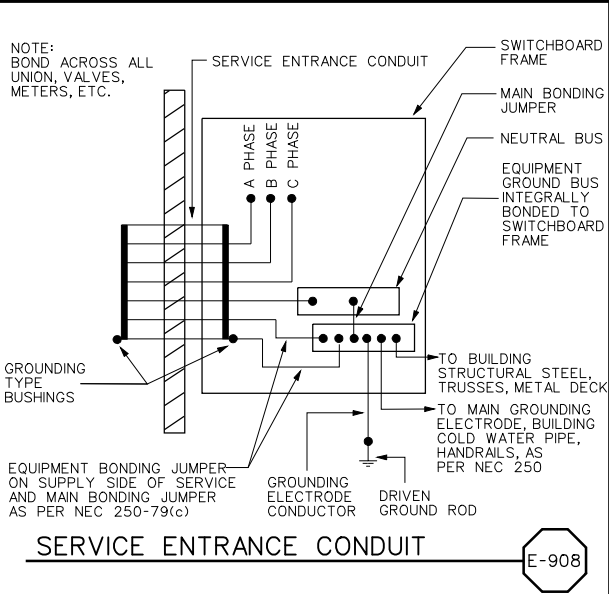
BENCH MARK	DATUM
ELEVATION	
DESCRIPTION	

J. CALTON
DRAWN BY: MWH
CHECKED BY: K. PEARSON
SCALE: NONE
DATE: 10/6/06
PROJECT NO: 1511331



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING  
ELECTRICAL  
DETAILS - I  
GE-04



NO.	REVISIONS	BY	DATE

BENCH MARK	
ELEVATION	DATUM
DESCRIPTION	

J. CALTON
DRAWN BY: MWH
CHECKED BY: K. PEARSON
SCALE: NONE
DATE: 10/6/06
PROJECT NO: 1511331



CITY OF  
ROSEVILLE

TRADITION · PRIDE · PROGRESS

CITY OF ROSEVILLE

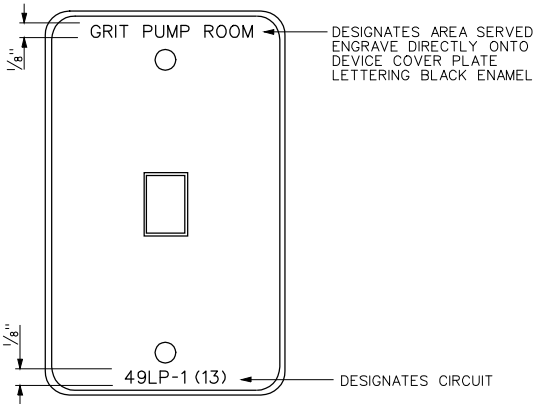
ENVIRONMENTAL UTILITIES DEPARTMENT

WOODCREEK NORTH PUMP STATION

8301 WOODCREEK OAKS BLVD. ROSEVILLE

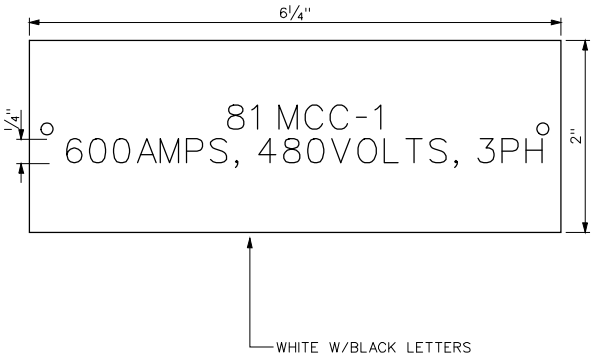
CONFORMED DRAWING	
ELECTRICAL DETAILS - II	GE-05

Plot Date: 13-JUN-2007 15:25  
User: egosse  
File: C:\Documents and Settings\egosse\Desktop\Project Transfer\Files\Woodcreek Transfer\WDCK\_Export\Import\wcnge06.dgn



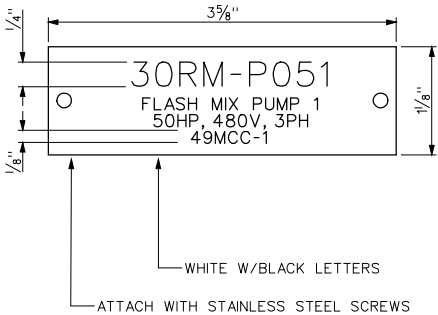
TYPICAL NAMEPLATE FOR LUMINAIRE SWITCH COVERS

E-926



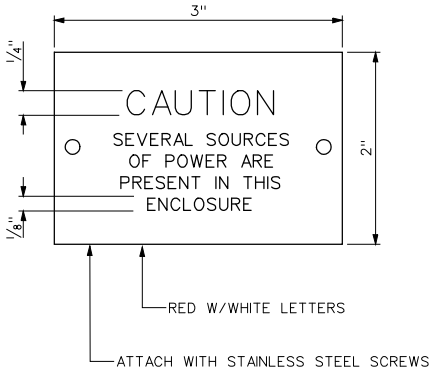
TYPICAL MCC NAMEPLATE

E-927



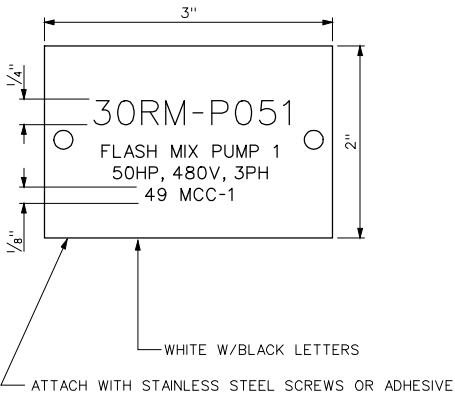
TYPICAL MCC UNIT (BUCKET) NAMEPLATE

E-928



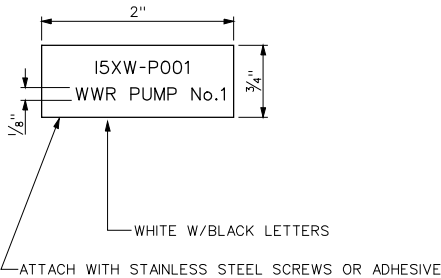
TYPICAL CAUTION NAMEPLATE

E-929



TYPICAL DISCONNECT SWITCH NAMEPLATE

E-930



TYPICAL CONTROL DEVICE NAMEPLATE

E-931

NO.	REVISIONS	BY	DATE

BENCH MARK
ELEVATION _____ DATUM _____
DESCRIPTION _____

J. CALTON
DRAWN BY: MWH
CHECKED BY: K. PEARSON
SCALE: NONE
DATE: 10/6/06
PROJECT NO: 1511331

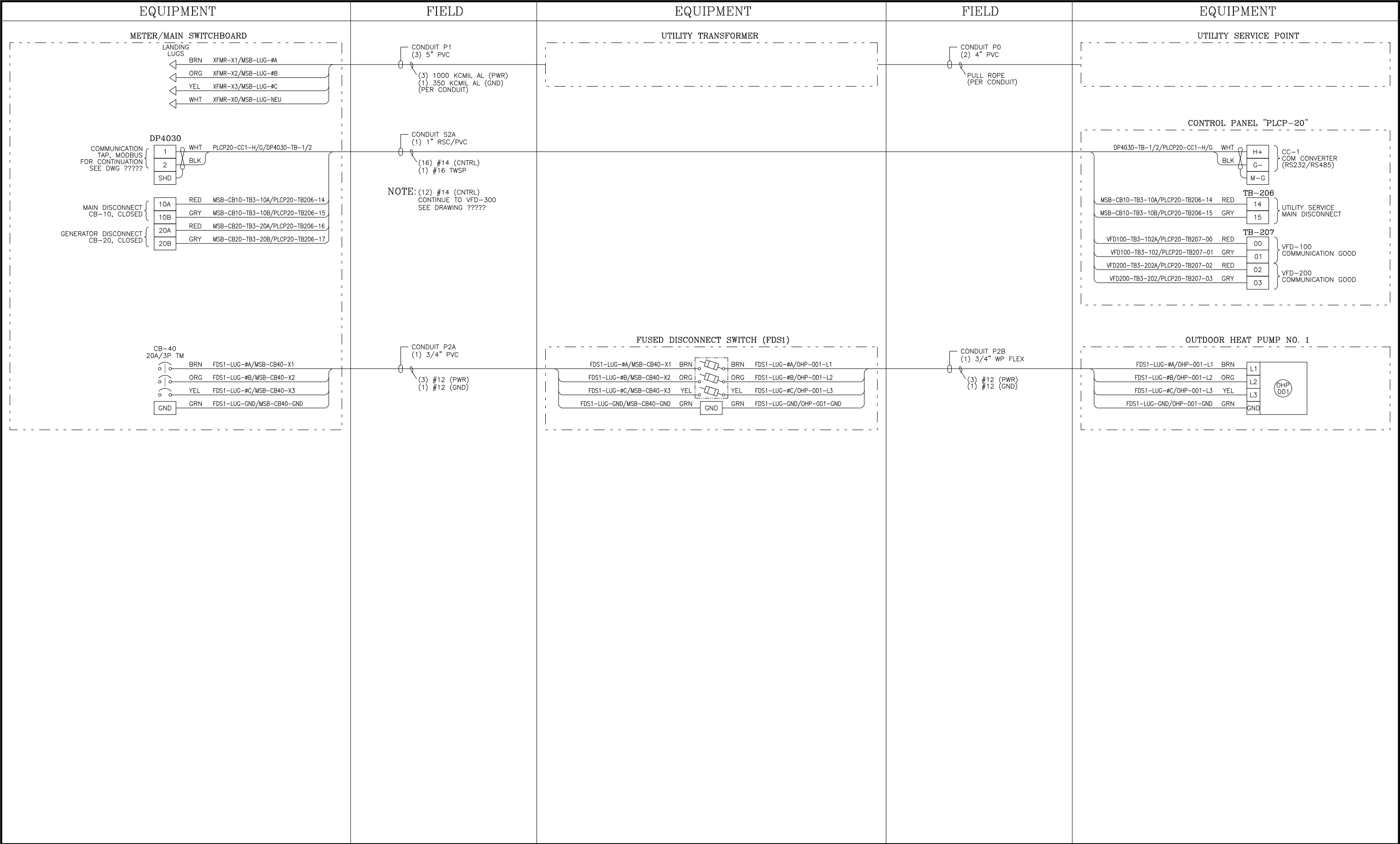


CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

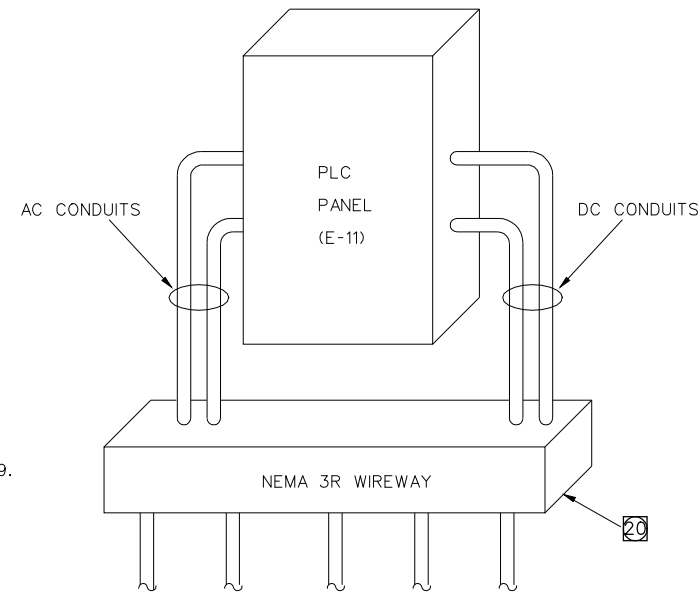
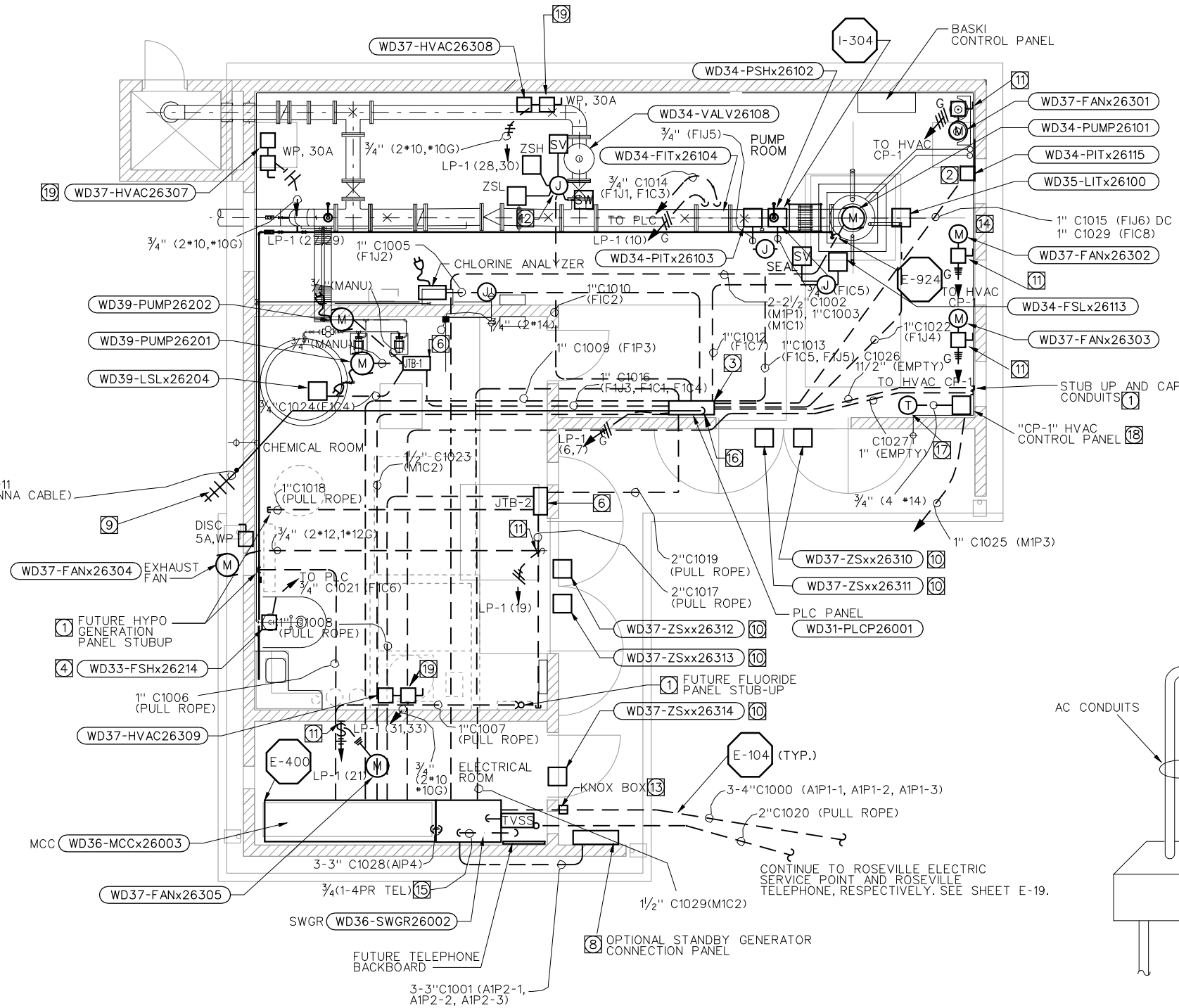
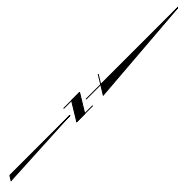
CONFORMED DRAWING

ELECTRICAL  
DETAILS - III

GE-06



				BENCH MARK	E. GOSSE				CITY OF ROSEVILLE ENVIRONMENTAL UTILITIES DEPARTMENT WOODCREEK NORTH PUMP STATION 8301 WOODCREEK OAKS BLVD. ROSEVILLE	CONFORMED DRAWING		GE-07				
				ELEVATION _____ DATUM _____	DRAWN BY: E. GOSSE					ELECTRICAL						
				DESCRIPTION _____	CHECKED BY: J. CALTON					SAMPLE WIRE LABELING FORMAT						
				_____	SCALE: NONE											
				_____	DATE: 4/5/07											
				_____	PROJECT NO: 1511331											
				_____												
1	ADD ENTIRE SHEET	EAG	4/07													
NO.	REVISIONS	BY	DATE													



PLC PANEL CONDUIT DETAIL - A  
NTS

NOTES:

- 1 STUB UP CONDUIT AND CAP PER DETAIL E-916.
- 2 PRESSURE TRANSMITTER PIT 115 PROVIDED BY BASKI VALVE SUPPLIER. INSTALLED, WIRED AND TESTED BY ELECTRICAL CONTRACTOR.
- 3 MOUNT CONTROL PANEL 5'-6" TO TOP OF PANEL ABOVE FINISHED FLOOR.
- 4 PROVIDE CONDUIT AND CABLE FROM SAFETY SHOWER FLOW SWITCH TO PLC, 3/4" CONDUIT WITH 2\*14 AWG.
- 5 PROVIDE NAMEPLATES ON ALL DISCONNECT SWITCHES WITH NAME OF EQUIPMENT AND TAG NUMBER OF EQUIPMENT OPERATING.
- 6 PROVIDE WALL MOUNTED 24"x20"x6"D JUNCTION TERMINAL BOX, NEMA 4X, STAINLESS STEEL, COMPLETE WITH BACK PANEL AND TERMINAL BLOCKS. PROVIDE ONE AC TERMINAL STRIP AND ONE DC TERMINAL STRIP. MOUNT 5'-6" TO TOP OF PANEL AFF.
- 7 CONTRACTOR RESPONSIBLE TO PROVIDE COMPLETE HVAC SYSTEM, INCLUDING WIRING, CONDUITS, STARTERS, CONTROLS, AND OTHER APPURTENANCES NOT SHOWN, REFER TO HVAC DRAWINGS AND SPECIFICATIONS.
- 8 PROVIDE LOCKABLE NEMA 3R CABINET, MOUNTED 5'-6" ABOVE FINAL GRADE TO TOP OF PANEL, FOR OPTIONAL STANDBY GENERATOR CONNECTION PANEL. PANEL TO BE HINGED DOOR, 30"Wx30"Hx12"D.
- 9 LOCATE AND ORIENT ANTENNA PER ENGINEER. REFER TO RADIO BLOCK DIAGRAM FOR INSTALLATION DETAIL. COORDINATE ROOF PENETRATION. ANTENNA TO BE 20' AFF.
- 10 WIRE INTRUSION SWITCHES INDIVIDUALLY BACK TO PLC CONTROL PANEL. USE 2 \*14 AWG, 1\*12 G IN 3/4" RIGID STEEL CONDUIT BACK TO PLC CONTROL PANEL FOR EACH SWITCH. SWITCH SHALL BE CLOSED WHEN DOOR IS CLOSED. SWITCHES SHALL BE CONNECTED IN SERIES AT THE PLC CONTROL PANEL AS SHOWN ON SHEET E-14. WIRE TO SINGLE DIGITAL INPUT.
- 11 PROVIDE MANUAL MOTOR STARTER WITH HP RATED SWITCH, LOCKABLE IN THE OFF POSITION, COMPLETE WITH ENCLOSURE. PROVIDE THERMAL TYPE OVERLOAD RELAY WITH MANUAL RESET AND HEATER ELEMENT SIZED FOR SPECIFIC MOTOR. MOUNT SWITCH ON WALL, 5'-4" ABOVE FINISHED FLOOR. PROVIDE NAME PLATE INSCRIBED "ROOM EXHAUST FAN". SWITCH TO BE RATED FOR 1/2 HP. OVERLOAD REALAYS NOT REQUIRED FOR PUMP ROOM EXHAUST FANS, BUT SWITCH TO BE TWO POLE.
- 12 STANCHION MOUNT, JUNCTION BOX, FLEX TO WASTE VALVE SOLENOIDS AND LIMIT SWITCHES.
- 13 PROVIDE SURFACE MOUNTED KNOX BOX 48" AFF FOR ROSEVILLE ELECTRIC ACCESS TO READ METERS
- 14 INSTALL WELL LEVEL TRANSDUCER DOWN 2" PIPE SECURE CABLE WITH COMPRESSION WIRE MESH GRIP
- 15 3/4" RIGID STEEL CONDUIT FOR FUTURE TELEPHONE SERVICES.
- 16 CONDUITS SHALL NOT ENTER PLC PANEL FROM BOTTOM, SEE DETAIL A BELOW.
- 17 THERMOSTAT FOR CONTROL OF WD37-FANx26301, 302, AND 303.
- 18 CONTRACTOR TO PROVIDE A SINGLE HVAC CONTROL PANEL, CP-1, TO CONTROL ALL THREE PUMP ROOM EXHAUST FANS. PANEL TO BE HINGED, NEMA 3R.
- 19 PROVIDE 30 AMP, DISCONNECT FOR UNIT HEATERS, WITH NAMEPLATE INSCRIBED WITH UNIT HEATER NUMBER. SWITCH SHALL BE LOCKABLE, AND IN NEMA 3R ENCLOSURE.
- 20 PROVIDE SEPERATION IN WIREWAY BETWEEN AC AND DC CABLES.

NO.	REVISIONS	BY	DATE
2	CORRECT MECH. REF. DWG, MOVED BASKI CTRL PNL (ADD. 4)	JLA	4/07
1	REVISE ALL TAG NUMBERS (ADD. 1)	EAG	3/07

BENCH MARK	
ELEVATION	DATUM
DESCRIPTION	

J. CALTON
DRAWN BY: MWH
CHECKED BY: K. PEARSON
SCALE: 1/4"=1'-0"
DATE: 10/6/06
PROJECT NO: 1511331

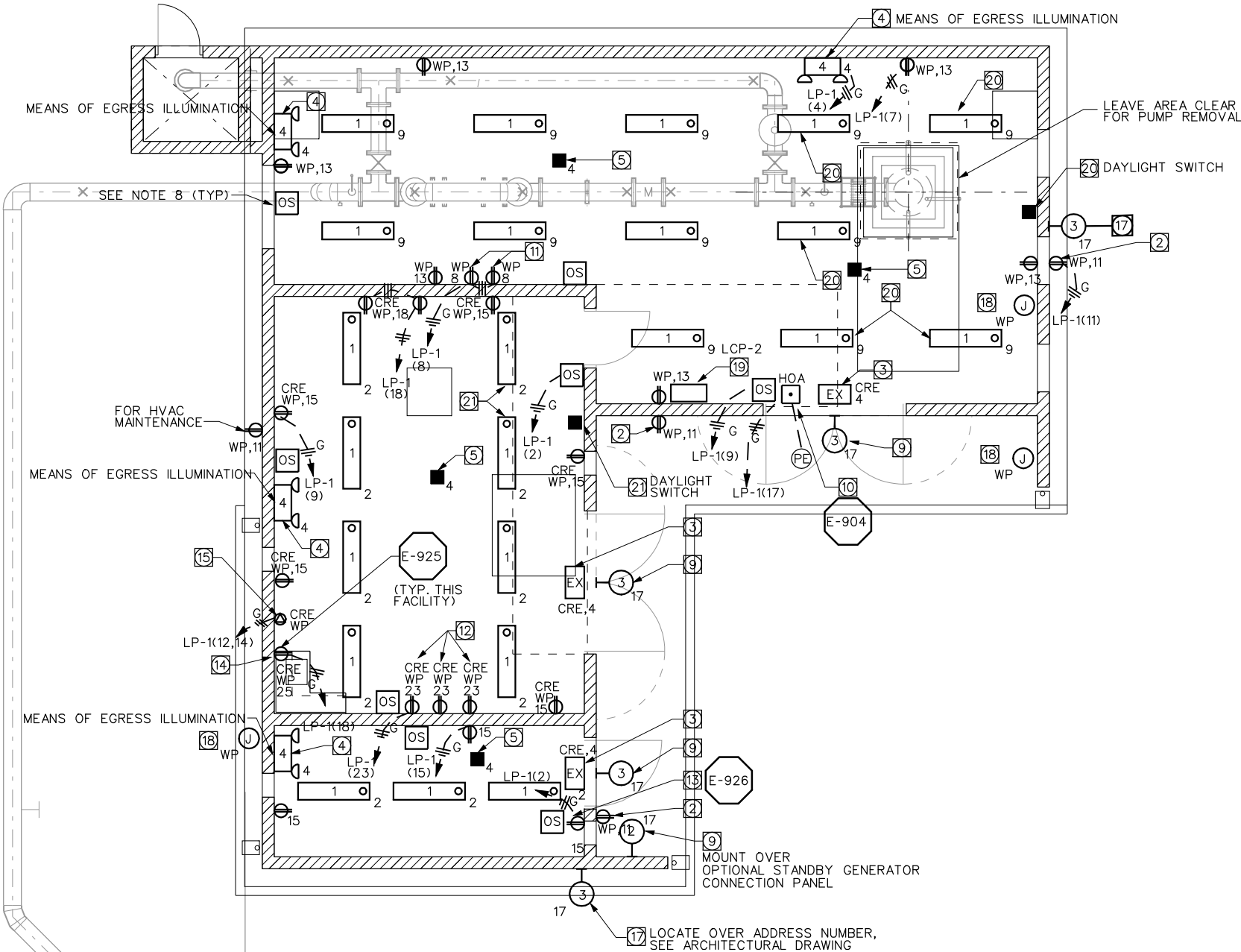


CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING

ELECTRICAL  
POWER AND CONTROL PLAN

E-01



NOTES:

1. ALL ROOMS WITHIN PUMP STATION ARE CONSIDERED "INTERIOR CORROSIVE" EXCEPT AS SPECIFIED. ALL EXTERIOR ENCLOSURES SHALL BE "NEMA 3R", OR "NEMA 4X" AS NOTED.
2. MOUNT EXTERIOR RECEPTACLES 18" ABOVE FINISHED GRADE.
3. MOUNT EXIT LIGHT ABOVE DOOR, 9'-0" ABOVE FINISHED FLOOR. MEANS OF EGRESS ILLUMINATION FIXTURE.
4. MOUNT EMERGENCY LIGHTING 8'-0" ABOVE FINISHED FLOOR. MEANS OF EGRESS ILLUMINATION FIXTURE.
5. WIRE SMOKE DETECTOR UNITS PER MANUFACTURERS INSTRUCTIONS. WIRE IN SERIES BACK TO PLC PANEL, FOR COMMON SMOKE ALARM.
7. MOUNT ALL TYPE 1 FIXTURES SO THAT BOTTOM OF FIXTURE IS 8'-0" ABOVE FINISHED FLOOR.
8. LIGHT SWITCHES ARE MOTION CONTROLLED AND LOCATION SHALL BE APPROVED BY MANUFACTURER FOR PROPER ORIENTATION. CONTRACTOR TO PROVIDE AUXILIARY MOTION SENSORS IF REQUIRED FOR COMPLETE ROOM COVERAGE. AUTOMATIC INTERIOR LIGHTING SYSTEM SHALL BE PROVIDED WITH OVERRIDE SWITCH DEVICE (TIMER) TO ALLOW LIGHTS TO REMAIN ON FOR NO MORE THAN 2 HOURS.
9. MOUNT EXTERIOR WALL FIXTURES ON SOFFIT AREA CENTER OVER DOORWAY
10. PROVIDE NAMEPLATE ABOVE OFF-AUTO SWITCH WHICH READS "EXTERIOR LIGHTING"
11. MOUNT RECEPTACLES (2) DEDICATED FOR WATER QUALITY ANALYZERS 4'-0" ABOVE FINISHED FLOOR. PROVIDE NAMEPLATES OVER RECEPTACLES INSCRIBED "FOR WATER ANALYZERS ONLY", 2 TOTAL.
12. MOUNT RECEPTACLES (3) DEDICATED FOR FUTURE WATER SOFTENERS 4'-0" ABOVE FINISHED FLOOR. PROVIDE NAMEPLATES OVER RECEPTACLES INSCRIBED "FOR WATER SOFTENERS ONLY", 3 TOTAL.
13. LIGHT SWITCH FOR ELECTRICAL ROOM SHALL NOT BE MOTION TYPE, BUT SINGLE POLE, SINGLE THROW TOGGLE STYLE, 20 AMP, LEVITON # 1221-2 OR EQUAL.
14. MOUNT DEDICATED GFCI RECEPTACLE FOR WATER DEIONIZER EQUIPMENT 4'-0" ABOVE FLOOR. PROVIDE NAMEPLATE OVER RECEPTACLE INSCRIBED "FOR WATER DEIONIZER ONLY".
15. LOCATE UNDER COUNTER/SINK HOT WATER HEATER RECEPTACLE 18" ABOVE FINISHED FLOOR. RECEPTACLE TO BE 220VAC, 30AMP RATED. PROVIDE NAMEPLATE OVER RECEPTACLE INSCRIBED "FOR 208V, 1PH, 30AMP HOT WATER HEATER"
16. FOR ELEVATION, LOCATION AND STYLE, SEE ARCHITECTURAL DRAWINGS
17. LOCATE EXTERIOR WALL FIXTURE PER ARCHITECTURAL DRAWINGS.
18. PROVIDE 4" X 4" BOX AT 6'-6" AFF. ROUTE 1" CONDUIT (PVC COATED RIGID STEEL) FROM J BOX TO PANEL LCP-2. INSTALL PULL ROPE. J BOX TO BE WATERPROOF.
19. LCP-2 SHALL BE A PADLOCKABLE NEMA 3R PANEL, 24"W x 24"H x 12"D. PROVIDE BACKPANEL.
20. LIGHT FIXTURES DESIGNED SHALL BE CONTROLLED BY OCCUPANCY SENSORS AND DAYLIGHT SWITCH AS SHOWN. DAYLIGHT SWITCH SHALL MONITOR LIGHT FROM SKYLIGHT AND CONTROL DESIGNATED FIXTURES.
21. CONTRACTOR IS RESPONSIBLE FOR DAYLIGHT SENSOR AND OCCUPANCY SENSOR SYSTEMS COMPLETE. THIS INCLUDES DESIGN LAYOUT, PANELS, CONTROLS, POWER SUPPLIES, CONDUIT, WIRING, ETC FOR A COMPLETE AND OPERABLE SYSTEM. PANELS SHALL HAVE NEMA RATINGS PER SPECIFICATIONS 16050-1.10.

NO.	REVISIONS	BY	DATE

BENCH MARK	
ELEVATION	DATUM
DESCRIPTION	

DRAWN BY: J. CALTON
CHECKED BY: K. PEARSON
SCALE: 1/4"=1'-0"
DATE: 10/6/06
PROJECT NO: 1511331

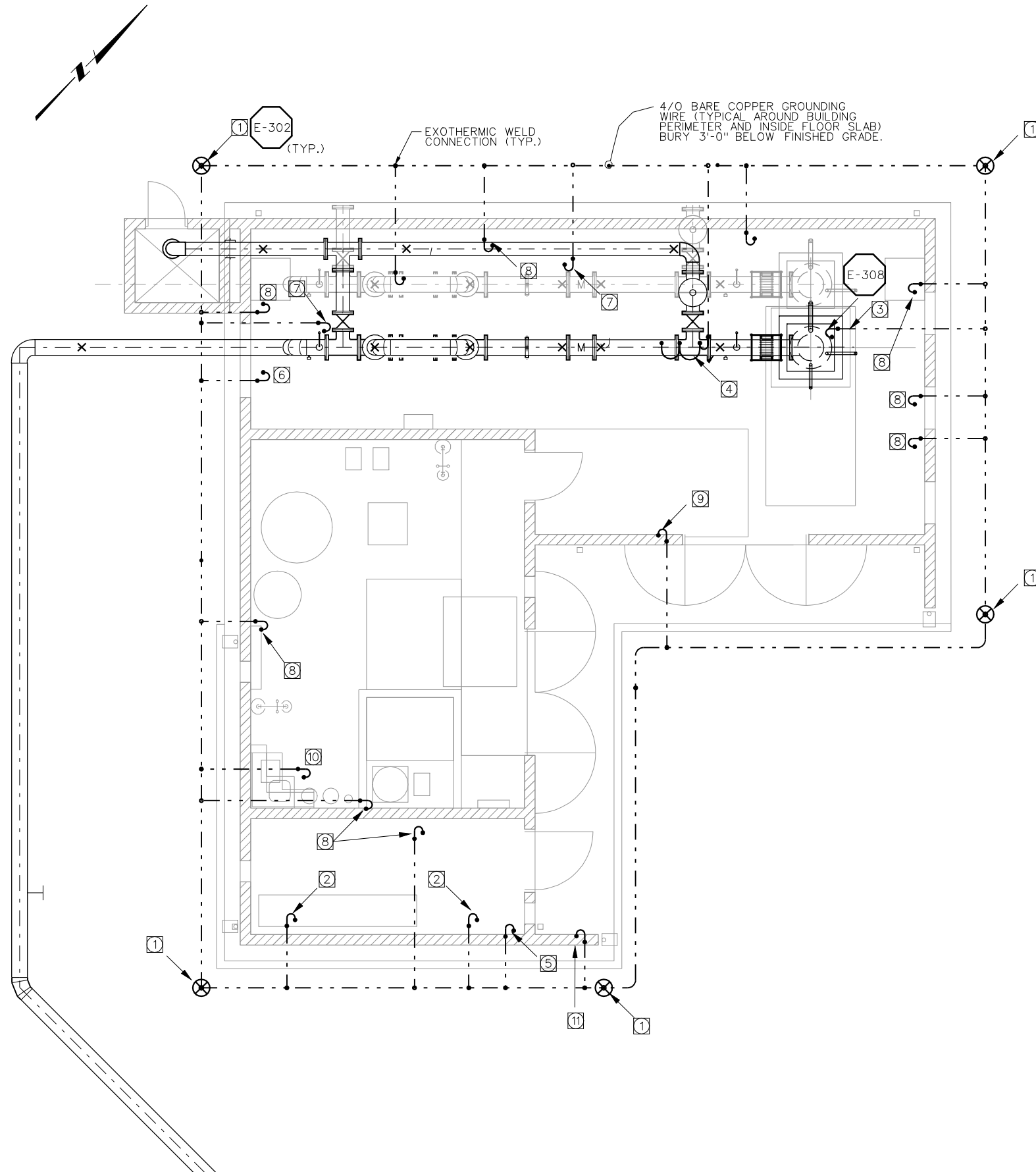


CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING

LIGHTING AND RECEPTACLE PLAN

E-02



NOTES:

- ① PROVIDE A CAST IRON LID FOR GROUND ROD BOXES.
- ② ROUTE #2/0 BARE COPPER GROUNDING CONDUCTOR THROUGH FLOOR SLAB AND CONNECT TO GROUND LUG AT MCC.
- ③ ROUTE #2 AWG BARE COPPER GROUNDING WIRE THROUGH FLOOR SLAB AND ATTACH TO PUMP FRAME.
- ④ ROUTE #6 BARE COPPER GROUNDING WIRE AND CONNECT TO MAGMETER GROUND RINGS, TRANSMITTER BODY, AND FLANGE CONNECTION BOLTS.
- ⑤ ROUTE #6 AWG BARE COPPER GROUNDING WIRE FOR FUTURE TELEPHONE EQUIPMENT GROUNDING.
- ⑥ ROUTE #2 AWG BARE COPPER GROUNDING WIRE UP WALL AND CONNECT TO METAL ROOF DECK.
- ⑦ ROUTE #2 AWG BARE COPPER GROUNDING WIRE THROUGH SLAB AND CONNECT TO WATER PIPING SYSTEM.
- ⑧ ROUTE #2 AWG BARE COPPER GROUNDING WIRE TO HVAC EQUIPMENT FRAME.
- ⑨ ROUTE #2 AWG BARE COPPER GROUNDING WIRE TO CONTROL PANEL.
- ⑩ ROUTE #4/0 BARE COPPER GROUNDING WIRE TO REBAR MAT AND ATTACH TO REBAR WITH COMPRESSION FITTINGS.
- ⑪ PROVIDE #2/0 BARE COPPER GROUNDING WIRE TO OPTIONAL STANDBY GENERATOR CONNECTION PANEL. CONNECT GROUND WIRES TO PANEL, GROUND WIRE, PANEL DOOR AND CONDUIT BUSHINGS.

NO.	REVISIONS	BY	DATE

BENCH MARK	
ELEVATION	DATUM
DESCRIPTION	

DRAWN BY: J. CALTON
CHECKED BY: K. PEARSON
SCALE: 1/4"=1'-0"
DATE: 3/26/03
PROJECT NO: 1511331



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING

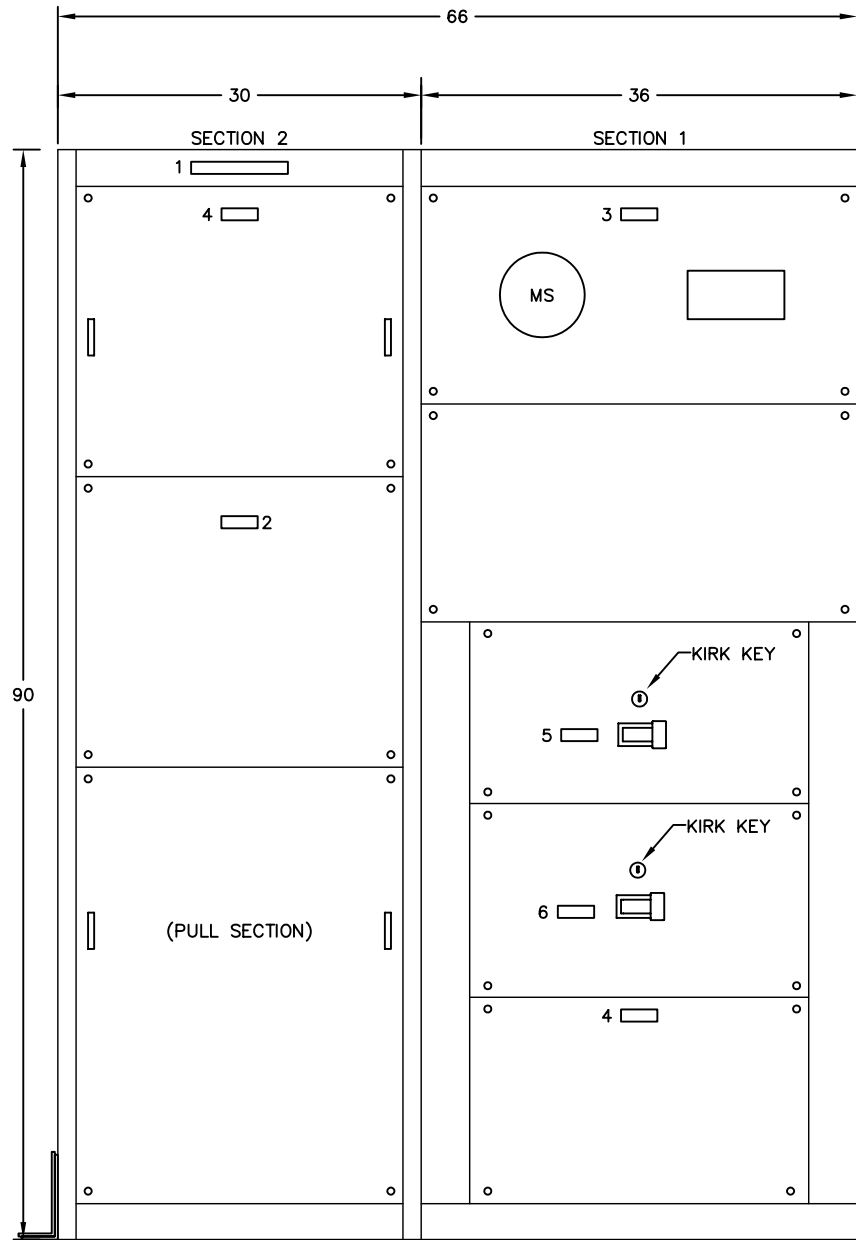
ELECTRICAL  
GROUNDING PLAN

E-03





\$\$\$\$DATE\$\$\$\$  
\$\$\$\$USER\$\$\$\$



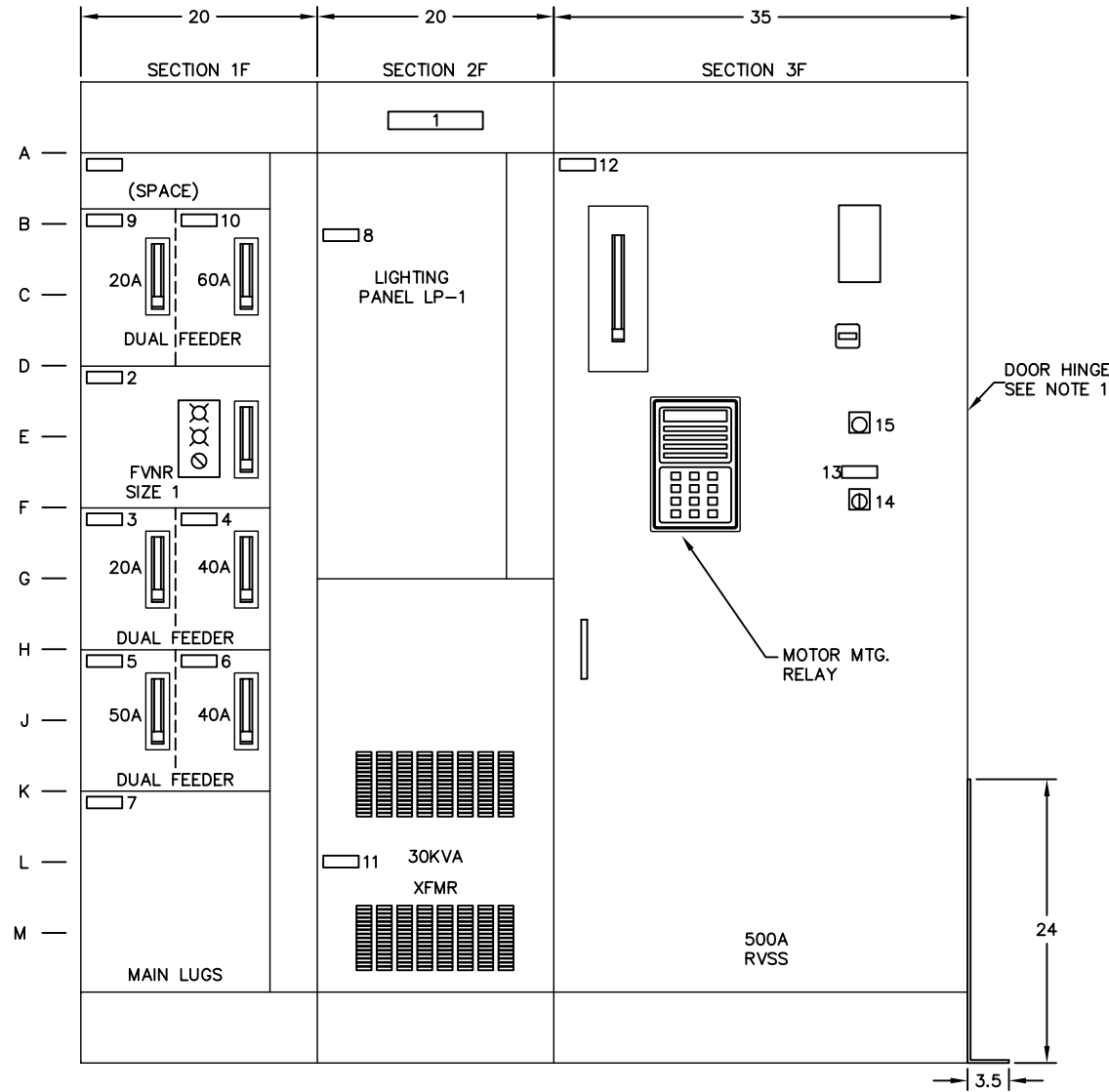
SWITCHBOARD FRONT VIEW

SWITCHBOARD

- ENCLOSURE DEPTH: 30"
- ENCLOSURE HEIGHT: 90"
- ENCLOSURE FINISH: ANSI 61
- HORIZONTAL BUS: 800A COPPER, SILVER PLATED, 4 WIRE
- VERTICAL BUS: 800A COPPER, SILVER PLATED
- GROUND BUS: COPPER
- BUS BRACING: 65K AICS SYM
- ENCLOSURE: NEMA 12

SWITCHBOARD NAMEPLATE ENGRAVING SCHEDULE			
ITEM	INSCRIPTION	LTR SIZE	N/P SIZE
1	SWGR-1	1/2	1 x 8
2	PULL SECTION	3/16	1 x 3
3	PUMP METER 1	3/16	1 x 3
4	LUG COMPARTMENT	3/16	1 x 3
5	MAIN BREAKER	3/16	1 x 3
6	GENERATOR BREAKER	3/16	1 x 3

MCC NAMEPLATE ENGRAVING SCHEDULE			
ITEM	INSCRIPTION	LTR SIZE	N/P SIZE
1	MCC-1	1/2	1 x 8
2	SPARE SIZE 1 FVNR	3/16	1 x 3
3	SPARE 20 AMP	3/16	1 x 3
4	FLUORIDE FEED PANEL	3/16	1 x 3
5	SODIUM HYPO GENERATION PANEL	3/16	1 x 3
6	SODIUM BISULFITE FEED PANEL	3/16	1 x 3
7	MAIN LUG COMPARTMENT	3/16	1 x 3
8	LIGHTING PANEL LP-1	3/16	1 x 3
9	HVAC AC-01	3/16	1 x 3
10	T-1 TRANSFORMER PRIMARY BREAKER	3/16	1 x 3
11	XFMR T-1 30 KVA 480-120/208V	3/16	1 x 3
12	WELL PUMP PMP101	3/16	1 x 3



MOTOR CONTROL CENTER FRONT VIEW

MCC NAMEPLATE ENGRAVING SCHEDULE			
ITEM	INSCRIPTION	LTR SIZE	N/P SIZE
13	STARTER	3/16	1 x 3
14	SMC OFF BYPASS	3/16	
15	RUN	3/16	

MOTOR CONTROL CENTER

- ENCLOSURE DEPTH: 20"
- ENCLOSURE FINISH: ANSI 61
- HORIZONTAL BUS: 800A, 3 WIRE
- ENCLOSURE: NEMA 12

- NOTES
1. DOOR ON STARTER SECTION 3F TO BE HINGED ON RIGHT HAND SIDE.

\$\$\$\$FILENAME\$\$\$\$

NO.	REVISIONS	BY	DATE

BENCH MARK  
ELEVATION \_\_\_\_\_ DATUM \_\_\_\_\_  
DESCRIPTION \_\_\_\_\_

DESIGN BY: J. CALTON  
DRAWN BY: D. CRITE  
CHECKED BY: K. PEARSON  
SCALE:  
DATE: 6/11/07  
PROJECT NO: 1511331



MWH



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION

CONFORMED DRAWING

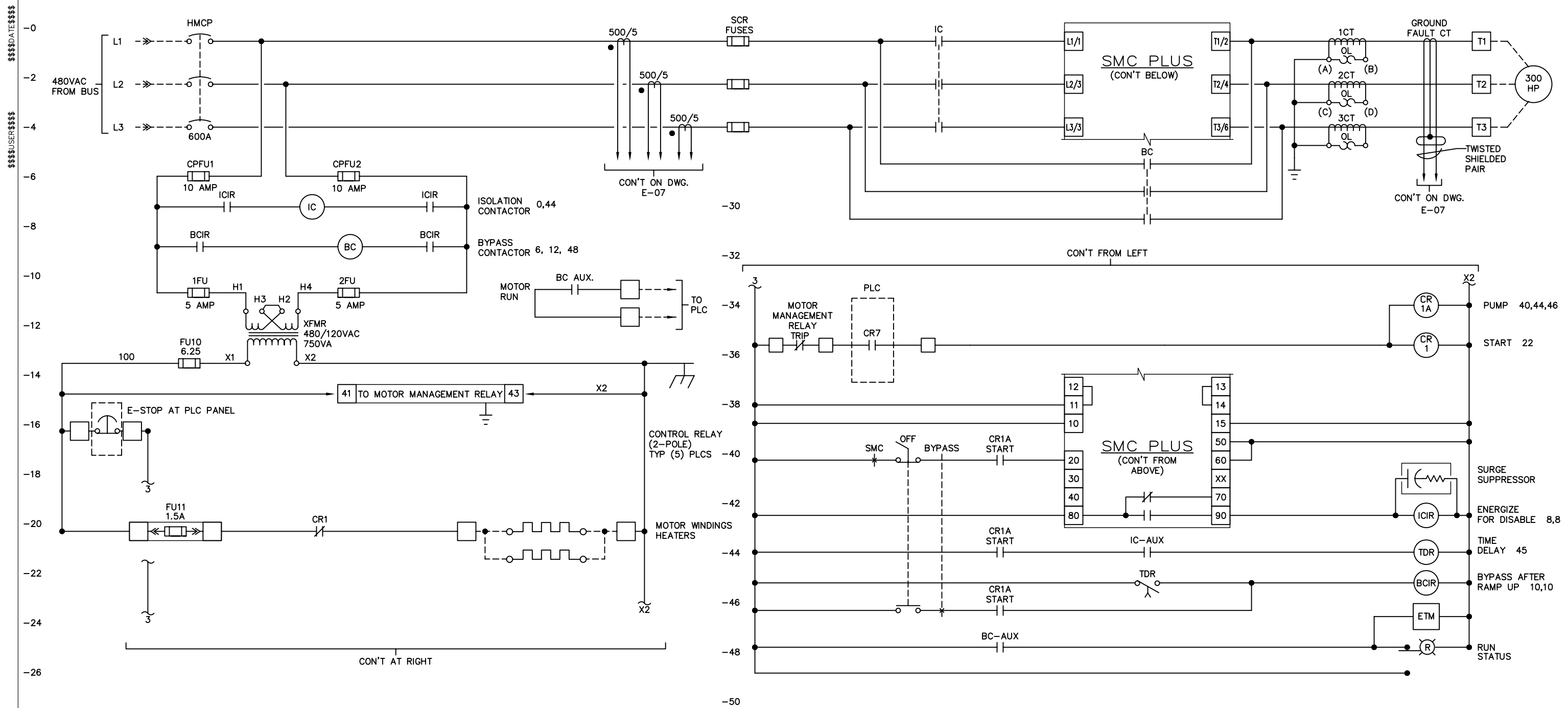
EQUIPMENT ELEVATION

E-05

\$\$\$DATE\$\$\$

\$\$\$USER\$\$\$

\$\$\$FILENAME\$\$\$



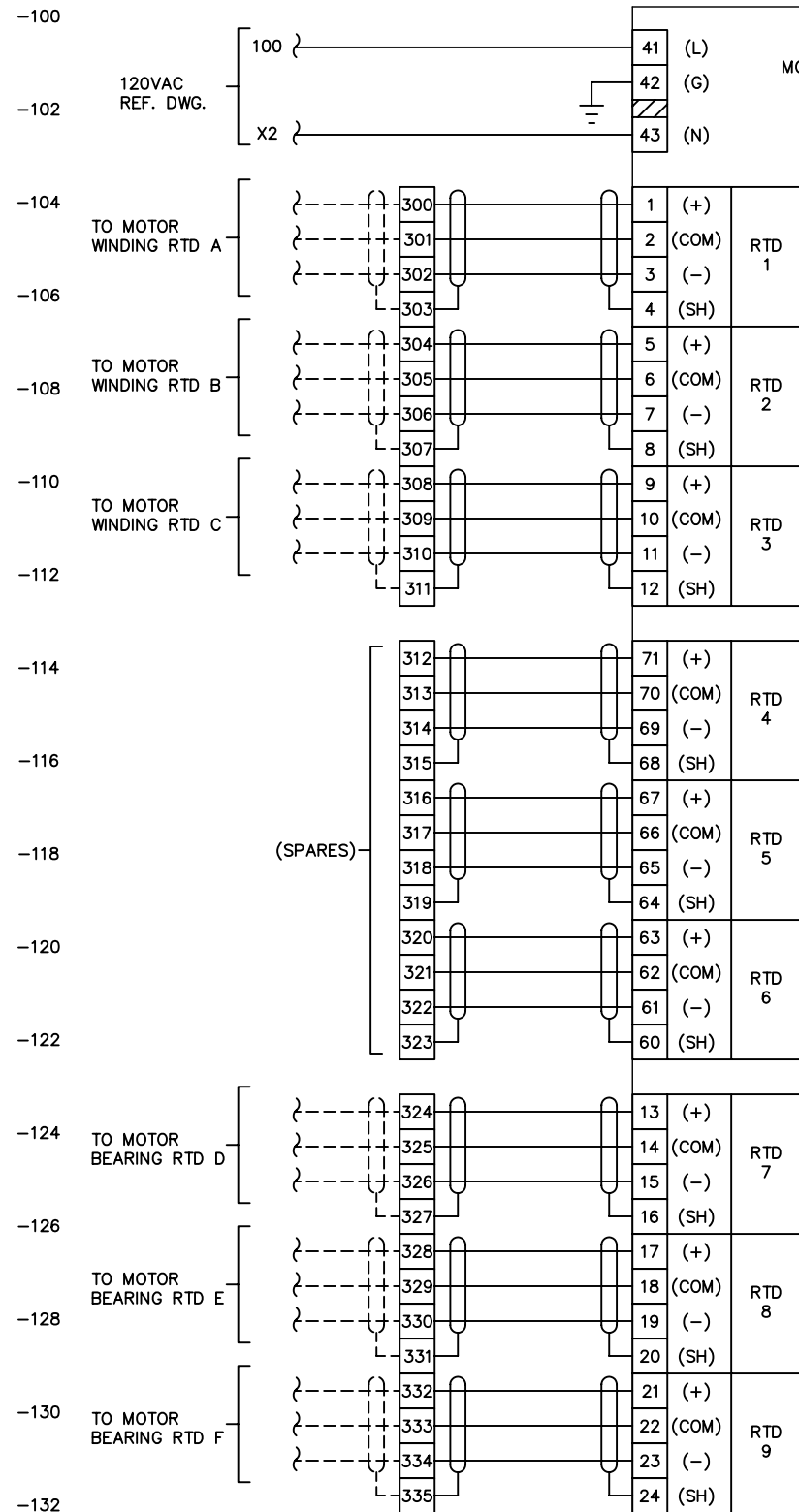
NOTES:  
1. CONTRACTOR SCHEMATICS TO INCLUDE LINE REFERENCES AND RELAY TO CONTACT CROSS REFERENCES FOR ALL SCHEMATICS.

PUMP MOTOR STARTER WIRING DIAGRAM

\$\$\$DATE\$\$\$

\$\$\$USER\$\$\$

\$\$\$FILENAME\$\$\$



MOTOR MANAGEMENT RELAY

GROUND C/T	(5A) (COM) (2000:1)	72 73 74
------------	---------------------------	----------------

PHASE C C/T	(5A) (COM) (1A)	75 76 77
-------------	-----------------------	----------------

PHASE B C/T	(5A) (COM) (1A)	78 79 80
-------------	-----------------------	----------------

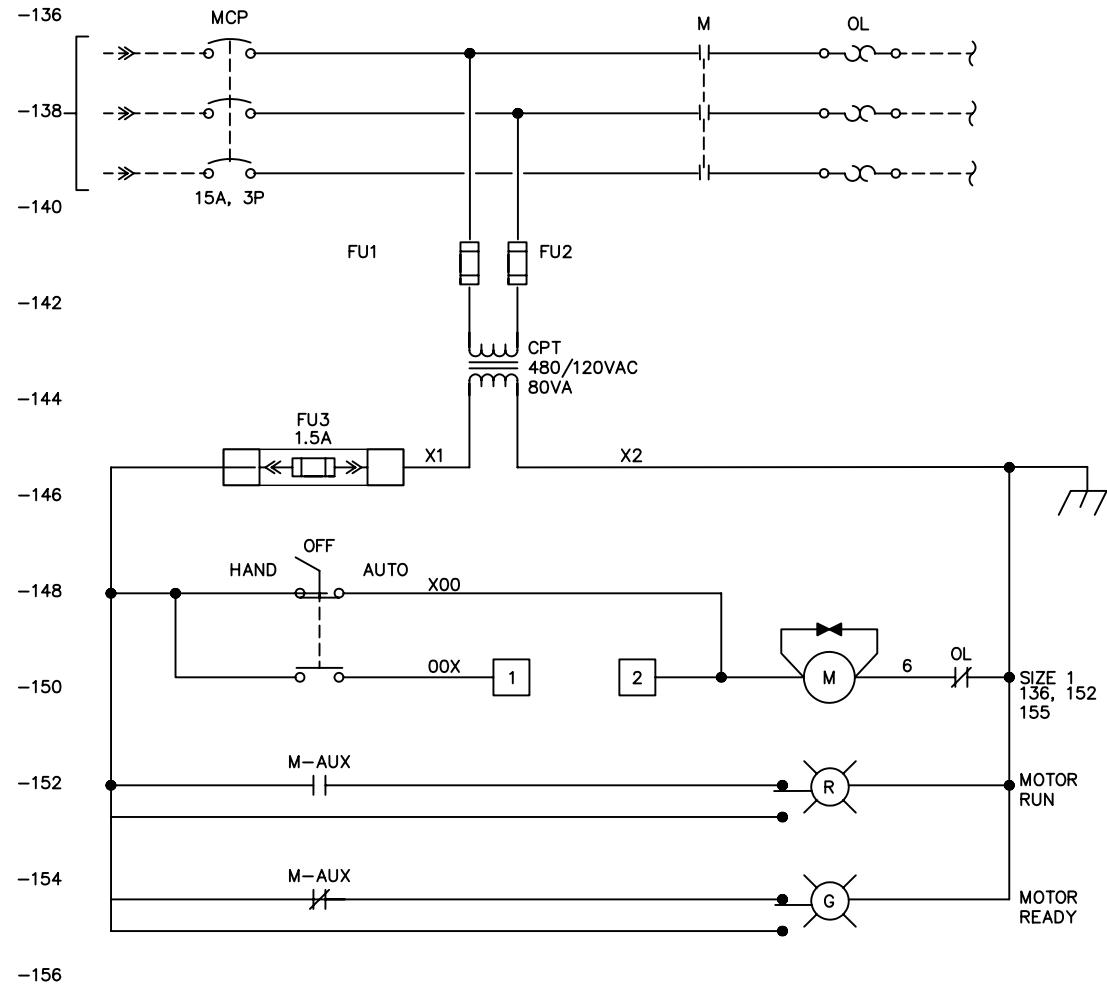
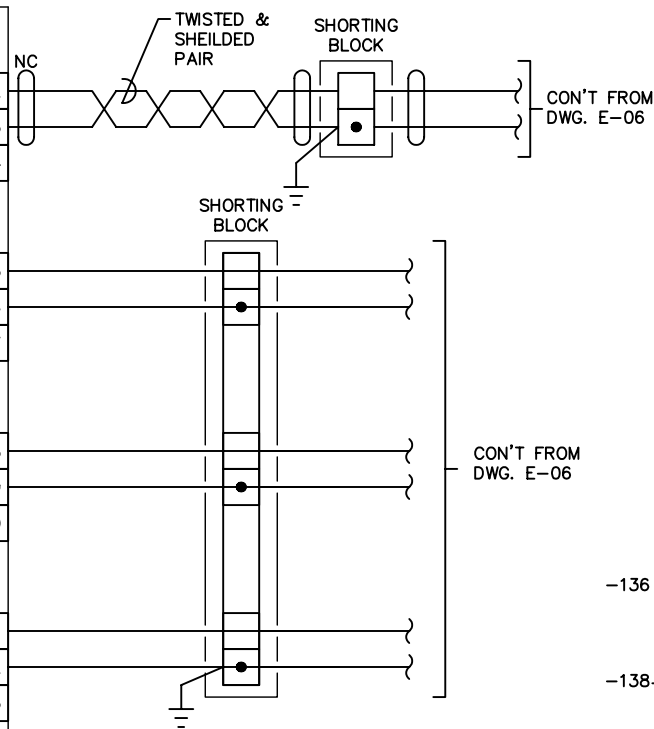
PHASE A C/T	(5A) (COM) (1A)	81 82 83
-------------	-----------------------	----------------

TRIP	(NC) (COM) (NO)	29 30 31
------	-----------------------	----------------

ALARM*	(NC) (COM) (NO)	32 33 34
--------	-----------------------	----------------

METER COM PORT	(+) (-)	85 84
----------------	------------	----------

\* SHUTDOWN TRIP FUNCTION



SPARE SIZE 1 STARTER

NOTES:

1. CONTRACTOR SCHEMATICS TO INCLUDE LINE REFERENCES AND RELAY TO CONTACT CROSS REFERENCES FOR ALL SCHEMATICS

BENCH MARK	
ELEVATION _____ DATUM _____	
DESCRIPTION _____	
_____	
_____	
_____	
_____	
NO.	REVISIONS
BY	DATE

DESIGN BY: J. CALTON  
DRAWN BY: D. CRITE  
CHECKED BY: K. PEARSON  
SCALE:  
DATE: 6/11/07  
PROJECT NO: 1511331



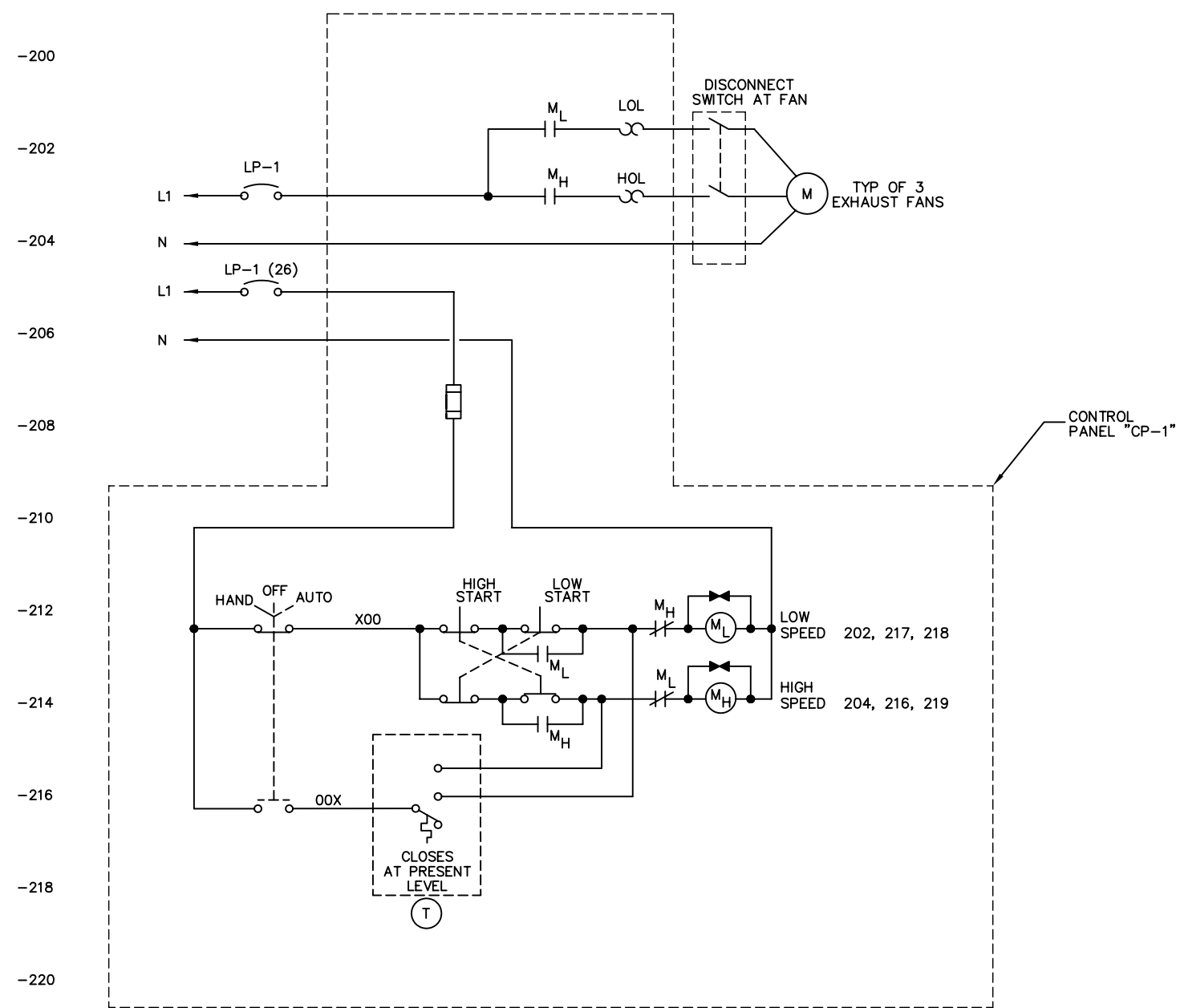
CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION

CONFORMED DRAWING

SCHEMATICS - II

E-07

\$\$\$\$DATE\$\$\$\$  
\$\$\$\$USER\$\$\$\$



2 SPEED 120V EXHAUST FAN CONTROL DIAGRAM — A

NOTES:  
1. CONTRACTOR SCHEMATICS TO INCLUDE LINE REFERENCES AND RELAY TO CONTACT CROSS REFERENCES FOR ALL SCHEMATICS.

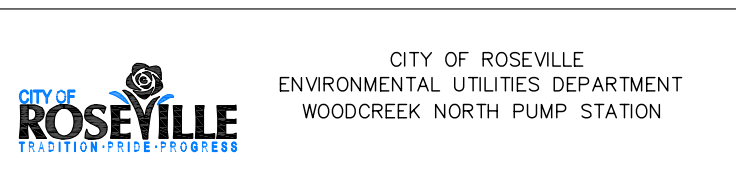
EQUIPMENT NAME	MOTOR TAG NO.	HP	LP-1 CIRCUIT NO.
PUMP ROOM EXHAUST FAN	WD37-FANx26301	1/4	20
PUMP ROOM EXHAUST FAN	WD37-FANx26302	1/4	22
PUMP ROOM EXHAUST FAN	WD37-FANx26303	1/4	24

\$\$\$\$FILENAME\$\$\$\$

NO.	REVISIONS	BY	DATE
1	REVISE ALL TAG NUMBERS (ADD. 1)	EAG	3/07

BENCH MARK	
ELEVATION _____ DATUM _____	
DESCRIPTION _____	

DESIGN BY: J. CALTON
DRAWN BY: D. CRITE
CHECKED BY: K. PEARSON
SCALE:
DATE: 6/11/07
PROJECT NO: 1511331



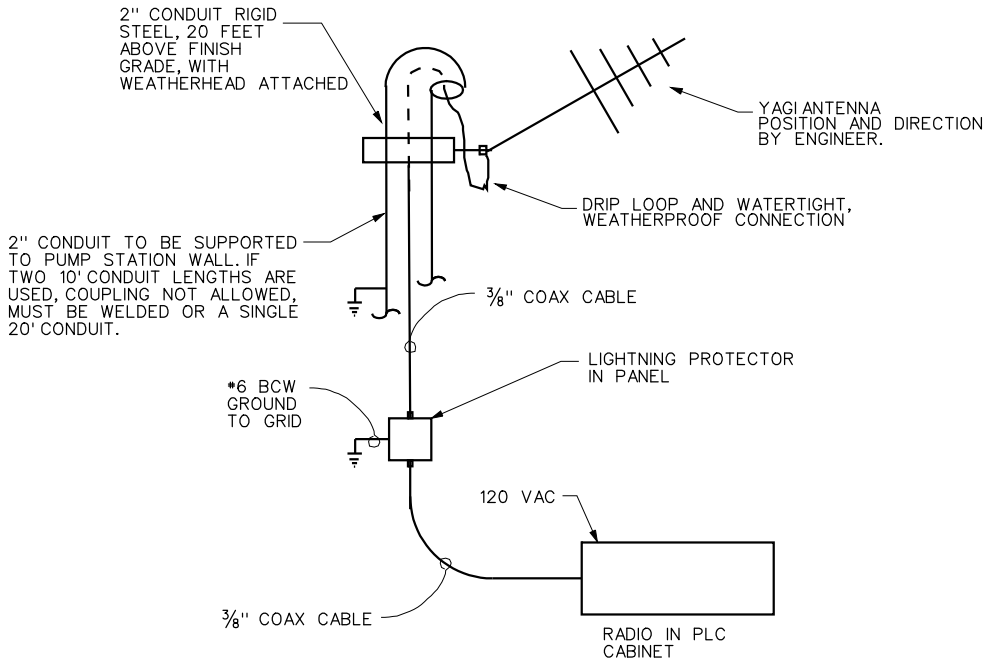
CONFORMED DRAWING
SCHEMATICS - III

E-07A

120/208VOLTS				PH:3		PANELLP-1				FEED:ugs			
100A MAIN BREAKER				W:4		LOCATION:Electric Room				MOUNTING:in MCC-1			
LOAD DESCRIPTION	KVA			Ø4	Ø6	Ø8	Ø10	Ø12	Ø14	Ø16	Ø18	Ø20	LOAD DESCRIPTION
	PH.A	PH.B	PH.C										
MAIN BREAKER				1									ELEC AND CHEM ROOM LIGHTS
				3	100								EMERGENCY LIGHTS, SMOKE ALARMS
				5									PLC CABINET (UPS)
PLC PANEL (LIGHT AND HEATER)	0.1			7	20								WATER QUALITY ANALYZER RECEPTACLES
PUMP ROOM LIGHTS		0.9		9	20								12" MAGMETER
EXTERIOR RECEPTACLES (NOTE 2)			0.7	11	20								HOT WATER HEATER, UNDER SINK, WD37_HXGR26306
PUMP ROOM RECEPTACLES (NOTE 2)	1.1			13	20								
ELEC AND CHEM ROOM RECEPTACLES (NOTE 2)		1.4		15	20								SPARE
EXTERIOR LIGHTS			0.4	17	20								HYP0 PUMPS RECEPTACLE
WD37-FANx26304, CHEM ROOM EXHAUST FAN	0.7			19	20								WD37-FANx26301, PUMP ROOM EXH. FAN
WD37-FANx26305, ELEC ROOM EXHAUST FAN		0.7		21	20								WD37-FANx26302, PUMP ROOM EXH. FAN
WATER SOFTENER RECEPTACLES			0.5	23	20								WD37-FANx26303, PUMP ROOM EXH. FAN
DEIONIZED WATER RECEPTACLES	0.2			25	20								HVAC CONTROL PANEL, CP-1
WD37-HVAC26307, PUMP ROOM		3.8		27	20								WD37-HVAC26308, PUMP ROOM
			3.8	29									
WD37-HVAC26309, CHEM ROOM	3.8			31	20								SPARE, 2 POLE
		3.8		33									
SPARE			X	35	20								SPARE
SPARE	X			37	20								SPARE
SPARE		X		39	20								SPARE
SPARE			X	41	20								SPARE
	5.9	10.6	5.4	TOTAL									
	PHASE LOAD												
	13.0	15.4	15.5										439 KVA

LIGHTING PANELBOARD "LP-1" SCHEDULE

REFER TO SPECIFICATION SECTION 16480



RADIO BLOCK DIAGRAM

REFER TO SPECIFICATION SECTION 17520

SYMBOL	VOLTS	DESCRIPTION	LAMPS	MOUNTING	MANUFACTURER/MODEL NO.
	120	UL LISTED FOR DAMP LOCATIONS, SURFACE MOUNTED FIBERGLASS FIXTURE, 48" LONG, MIRO 4 PREMIUM ENHANCED ALUMINUM REFLECTOR, HIGH IMPACT ACRYLIC COVER, MEDIUM POWER OUTPUT ELECTRONIC BALLAST. OVERALL EFFICIENCY OF 81%.	FLUORESCENT 2-32 W T8 SYLVANIA LAMPS	CEILING	HOLOPHANE HES-S-04-X-BBB-N-042-MP-1-1 PROVIDE WITH OSRAM SYLVANIA EXTENDED WARRANTY
	120	100 WATT RATED INCANDESCENT FIXTURE, ENCLOSED AND GASKETED, WALL MOUNTED, UL LISTED FOR WET LOCATIONS. PROVIDE GLOBE WITH GUARD.	INCANDESCENT 1-100 W A-19	WALL	CROUSE-HINDS VXHBF22GP
	120	SURFACE MOUNTED LUMINAIRE WITH RUGGED DIE CAST ALUMINUM HALF LID AND GUARD. CRYSTAL GLASS DIFFUSER WITH INTERNAL TEXTURED SURFACE. CAPTIVE SOCKET HEAD STAINLESS STEEL SCREWS. HORIZONTAL MOUNTING. PROVIDE BLACK COLOR FIXTURE. UL LISTED FOR WET LOCATIONS.	HIGH PRESSURE SODIUM 1-50W, E-17	SOFFIT	BEGA 2981S
	120	EMERGENCY BATTERY OPERATED UNIT, NEMA 4X FIBERGLASS HOUSING, WITH TEST SWITCH, PILOT LIGHT, SOLID-STATE AUTOMATIC CHARGING SYSTEMS, SEALED 12 VOLT NICKEL-CADMIUM BATTERIES, TWO (2) SEALED BEAM LAMPS MINIMUM 1-1/2 HOURS TO 87-1/2% OF NORMAL VOLTAGE, UL LISTED, WITH 15 MIN TIME DELAY.	HIT 2-12W	WALL	HOLOPHANE DM7-N-25-T-NE-2-T1(15)-NK SHT1
CRE	120	UL LISTED SELF POWERED EXIT SIGN, RATED NEMA 4X CORROSION RESISTANT HOUSING WITH RED LETTERS, INVERTED-CHARGER-BATTERY BALLAST, PUSH-TO-TEST SWITCH, SEALED NI-CAD BATTERY, INDICATOR LIGHT, 90 MINUTES OF OPERATION, WITH TIME DELAY.	LED	WALL	HOLOPHANE DELEON HD SERIES LHDE-D-NC-G-GR-S-N-NK-T1

LIGHTING FIXTURE SCHEDULE

REFER TO SPECIFICATION SECTION 16500

- NOTES:
- LOAD VALUES SHOWN IN VOLT-AMPERES.
  - PROVIDE 120V, 20A, SINGLE POLE GFCI CIRCUIT BREAKER.
  - REFER TO SPECIFICATIONS FOR FURTHER REQUIREMENTS ON LAMP STYLE AND TYPE.

1	REVISE ALL TAG NUMBERS (ADD. 1)	EAG	3/07		
NO.	REVISIONS	BY	DATE		

BENCH MARK	
ELEVATION _____ DATUM _____	
DESCRIPTION _____	
_____	
_____	
_____	

J. CALTON
DRAWN BY: D. CRITE
CHECKED BY: K. PEARSON
SCALE: NONE
DATE: 10/6/06
PROJECT NO: 1511331



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING

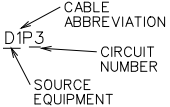
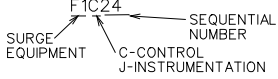
PANELBOARD AND LIGHTING  
SCHEDULES, RADIO DIAGRAM

E-08

CONDUIT INSTALLATION	CONDUIT TYPE
EXPOSED (INDOOR AND OUTDOOR)	RIGID GALVANIZED STEEL PVC COATED CONDUIT, UNLESS STATED OTHERWISE
CONDUIT IN CONCRETE	PVC SCH 40, OR RIGID GALVANIZED STEEL CONDUIT
UNDERGROUND CONDUIT	RIGID GALVANIZED STEEL PVC COATED CONDUIT WHERE THE CONDUIT IS DIRECTLY IN CONTACT WITH THE EARTH, OR SCHEDULE 40 PVC CONDUIT WITH CONCRETE ENCASEMENT MINIMUM OF 4" ALL AROUND.
CONDUIT IN DUCT BANK	SCHEDULE 40 PVC CONDUIT WITH CONCRETE ENCASEMENT MINIMUM OF 4" ALL AROUND.
VERTICAL SWEEP AND RISER	RIGID GALVANIZED STEEL PVC COATED CONDUIT FROM UNDERGROUND INCLUDING ELBOW UP AND 18" OF EXPOSED CONDUIT ABOVE FINISHED GRADE.
BOTTOM ENTRANCE OF SWITCHGEAR, DISTRIBUTION PANEL, MCC, ETC.	RIGID GALVANIZED STEEL PVC COATED CONDUIT ELBOW UP AND SECTION ALL THE WAY TO INSULATED THROAT GROUNDING LUG.
SIDE OR TOP ENTRANCE OF SWITCHGEAR, DISTRIBUTION PANNEL, MCC, ETC.	RIGID GALVANIZED STEEL CONDUIT, UNLESS CORROSIVE AREA THAN PVC COATED RIGID STEEL CONDUIT.
CONDUIT EXPOSED TO CORROSIVE ENVIRONMENT	RIGID GALVANIZED STEEL PVC COATED CONDUIT
MOTOR CONDUIT BOX TO RIGID WIREWAY SYSTEM	FLEXIBLE LIQUIDTIGHT CONDUIT, 18" MAXIMUM LENGTH

CONDUIT SCHEDULE					
CONDUIT		CABLE NUMBER	FROM	TO	REMARKS
NO.	SIZE				
C1000	3-4"	A1P1-1, A1P1-2, A1P1-3	UTILITY PADMOUNT	SWITCHGEAR	METERING SECTION
C1001	3-3"	A1P2-1, A1P2-2, A1P2-3	SWITCHGEAR	OPT. STANDBY GEN CONN PANEL	
C1002	2-2½"	M1P1-1, M1P1-2	MCC	WELL PUMP	
C1003	1"	M1C1	MCC	WELL PUMP	
C1004	1½"	A1P3	SWITCHGEAR	TVSS	
C1005	1"	F1J2	PLC PANEL	CHLORINE ANALYZER	
C1006	1"	PULL ROPE ONLY	MCC	FUTURE HYPO GEN	FUTURE EQUIPMENT, STUB-UP
C1007	1"	PULL ROPE ONLY	MCC	FUTURE FL PANEL	FUTURE EQUIPMENT, STUB-UP
C1008	1"	PULL ROPE ONLY	MCC	JTB-2	
C1009	1"	F1P1	MCC	PLC PANEL	AC CABLE
C1010	1"	F1C2	PLC PANEL	WASTE VALVE, DW07VLV108	DC CABLE
C1011	2"	ANTENNA CABLE	PLC PANEL	YAG1 ANTENNA	
C1012	1"	F1C7	PLC PANEL	J BOX AT FLUSH VALVE	
C1013	1"	F1C5, F1J5	PLC PANEL	PUMP DISCHARGE PRESSURE	SWITCH AND TRANSMITTER
C1014	¾"	F1J1, F1C3	PLC PANEL	MAGMETER, DW06FIT104	
C1015	¾"	F1J6	PLC PANEL	BASKI VALVE PRESSURE	
C1016	1"	F1J3, F1C1	PLC PANEL	JTB-1	DC CABLE
C1017	2"	PULL ROPE ONLY	JTB-2	S/E CORNER - CHEM	FUTURE
C1018	1"	PULL ROPE ONLY	JTB-2	WEST WALL - CHEM	FUTURE
C1019	2"	PULL ROPE ONLY	JTB-2	PLC PANEL	FUTURE
C1020	2"	PULL ROPE ONLY	TEL SERVICE	ELEC ROOM	
C1021	¾"	F1C6	PLC PANEL	SHOWER FLOW SWITCH	
C1022	1"	F1J4	PLC PANEL	WELL PUMP LEVEL	
C1023	1½"	M1C2	MCC	PLC PANEL	
C1024	¾"	F1C4	JTB-1	HYPO TANK LEVEL SWITCH	DC CABLE
C1025	1"	M1P3	MCC	HVAC CONTROL PANEL CP-1	
C1026	1½"	PULL ROPE ONLY	PLC PANEL	EAST WALL PUMP ROOM	FUTURE SODIUM BISULFITE
C1027	1"	PULL ROPE ONLY	MCC	EAST WALL PUMP ROOM	FUTURE SODIUM BISULFITE
C1028	3-3"	A1P4-1, A1P4-2, A1P4-3	SWITCHGEAR	MCC	
C1029	1"	F1C8	PLC PANEL	BASKI VALVE	

CABLE SCHEDULE				
CABLE		FROM	TO	REMARKS
NO.	QTY & SIZE	EQUIPMENT	EQUIPMENT	
A1P1-1	4-*350	ROSEVILLE ELECTRIC	MAIN BREAKER, SWITCHGEAR	
A1P1-2	4-*350	ROSEVILLE ELECTRIC	MAIN BREAKER, SWITCHGEAR	
A1P1-3	4-*350	ROSEVILLE ELECTRIC	MAIN BREAKER, SWITCHGEAR	
A1P2-1	4-*350, 1-3/0 GRD	OP STANDBY GEN CONN PANEL	OPT. STANDBY GEN BREAKER, SWGR	PROVIDE ONE GROUND WIRE PER CONDUIT
A1P2-2	4-*350, 1-3/0 GRD	OP STANDBY GEN CONN PANEL	OPT. STANDBY GEN BREAKER, SWGR	PROVIDE ONE GROUND WIRE PER CONDUIT
A1P2-3	4-*350, 1-3/0 GRD	OP STANDBY GEN CONN PANEL	OPT. STANDBY GEN BREAKER, SWGR	PROVIDE ONE GROUND WIRE PER CONDUIT
A1P3	4-*8, *8 GRD	SWITCHGEAR	TVSS	
A1P4-1	3-*350, 1-3/0 GND	SWITCHGEAR	MCC	
A1P4-2	3-*350, 1-3/0 GND	SWITCHGEAR	MCC	
A1P4-3	3-*350, 1-3/0 GND	SWITCHGEAR	MCC	
M1P1-1	3-*250, 1-1/0 GRD	MCC	WELL PUMP	PROVIDE ONE GROUND WIRE PER CONDUIT
M1P1-2	3-*250, 1-1/0 GRD	MCC	WELL PUMP	PROVIDE ONE GROUND WIRE PER CONDUIT
M1P2				
M1P3	6-*12, 1-*12 GRD	MCC	HVAC CONTROL PANEL CP-1	
M1C1	6-RTD CABLES, 2-*12	MCC, PUMP RELAY	PUMP MOTOR RTD'S, HEATER	RTD TYPE CABLE BELDEN 85103
M1C2	20-*14, 1-*14G, CAT5 CABLE	MCC (24 VDC)	PLC PANEL	VARIOUS CONTROLS & CAT5 FROM MULTILIN
F1P1	4-*12, 1-*12G	MCC	PLC PANEL	WELL PUMP CALL, 2 SPARE
F1C1	4-*14, 1-*14G	JTB-1	HYPO PUMP FAIL ALARM (2 SPARES)	
F1C2	4-*12, 1-*12G, 4-*14	WASTE VALVE	PLC PANEL	SOLENOID, OPEN & CLOSE STATUS
F1C3	2-*14	MAGMETER	PLC PANEL	
F1C4	2-*14	PLC PANEL	HYPO TANK LEVEL SWITCH	
F1C5	2-*14, 1-*14G	PLC PANEL	PUMP DISC PRESSURE	
F1C6	4-*14	PLC PANEL	SAFETY SHOWER FLOW SWITCH	24V DC POWER
F1C7	6-*14, 1-*14G	PLC PANEL	FLUSH WATER FLOW SWITCH, SOLENOID	24V DC POWER
F1C8	6-*14	PLC PANEL	BASKI VALVE	
F1J1	1-*16 TSP	MAGMETER	PLC PANEL	
F1J2	2-*16 TSP	CHLORINE ANALYZER - J BOX	PLC PANEL	
F1J3	2-*16 TSP	PLC PANEL	JTB-1	HYPO PUMP SPEED
F1J4	2-*16 TSP	PLC PANEL	WELL LEVEL	
F1J5	1-*16 TSP	PLC PANEL	PUMP DISCHARGE PRESSURE	
F1J6	2-*16 TSP	PLC PANEL	BASKI VALVE PRESSURE	

POWER CABLE NUMBERING SCHEME	CONTROL AND INSTRUMENTATION CABLE NUMBERING SCHEME	POWER CABLE SOURCE EQUIPMENT ABBREVIATION	CABLE ABBREVIATIONS
		A - SWITCHGEAR D - DISTRIBUTION PANEL "D2" IS PANEL "DP-2" M - MOTOR CONTROL CENTER "M1" IS "MCC-1" F - FIELD DEVICE	C = CONTROL J = INSTRUMENT (LOW LEVEL DC) P = POWER TSP = TWISTED SHIELDED PAIR

NOTES:

- ALL ACCEPTABLE CONDUIT MATERIALS ARE SPECIFIED IN SPECIFICATION SECTIONS 16110 AND 16111.
- ANY CONDUIT NOT COVERED IN THE ABOVE CATEGORIES SHALL BE RIGID GALVANIZED STEEL PVC COATED.
- REFER TO SPECIFICATION 16050 FOR ELECTRICAL AREA CLASSIFICATIONS.
- FOR CONDUIT INSTALLATION TO FUTURE EQUIPMENT SEE TYPICAL FLUSH CONDUIT INSTALLATIONS SUB DETAILS, E-206 AND E-916.

2	"MCC-1" TO "MCC", "SWGR-1" TO "SWITCHGEAR" OR "SWGR"	EAG	6/07
1	REVISE ALL TAG NUMBERS (ADD. 1)	EAG	3/07
NO.	REVISIONS	BY	DATE

BENCH MARK  
ELEVATION \_\_\_\_\_ DATUM \_\_\_\_\_  
DESCRIPTION \_\_\_\_\_

J. CALTON  
DRAWN BY: D. CRITE  
CHECKED BY: K. PEARSON  
SCALE: NONE  
DATE: 10/6/06  
PROJECT NO: 1511331



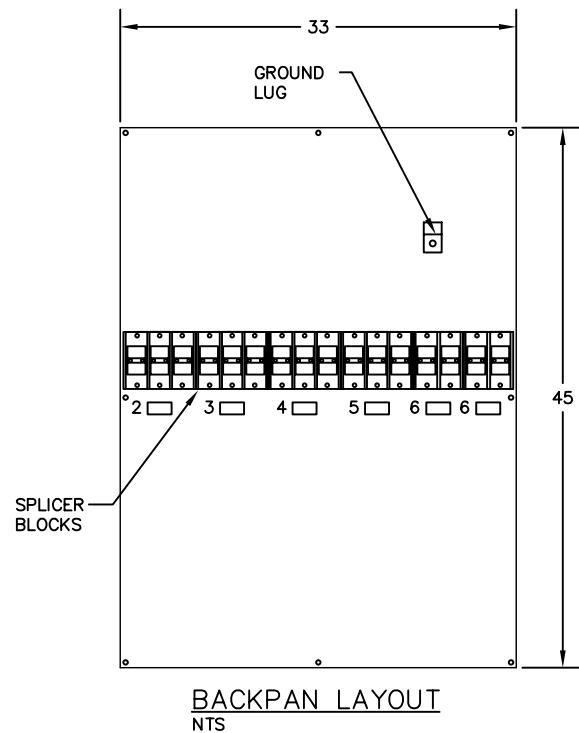
CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING

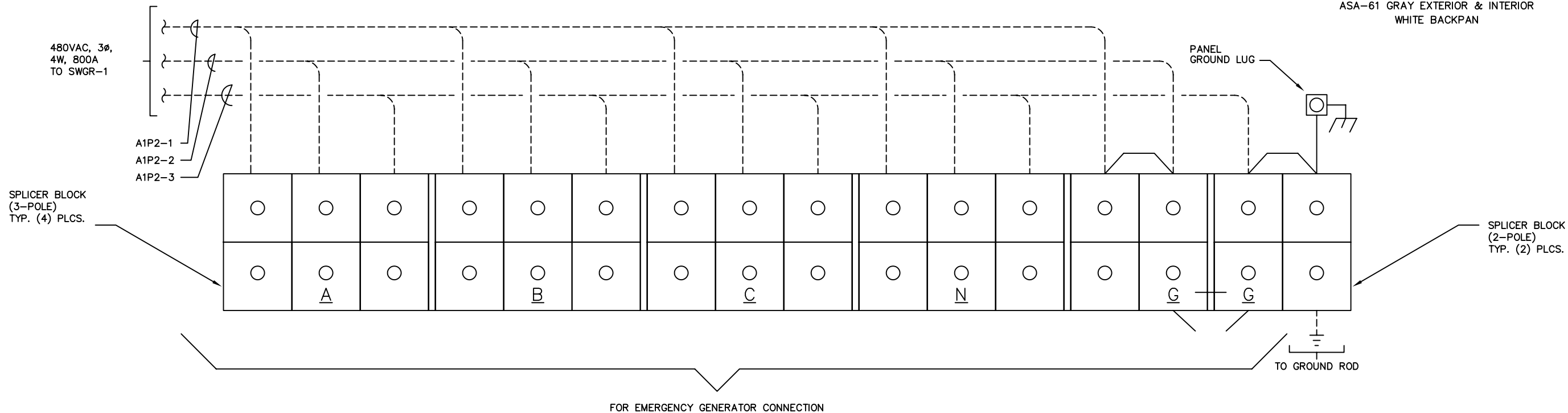
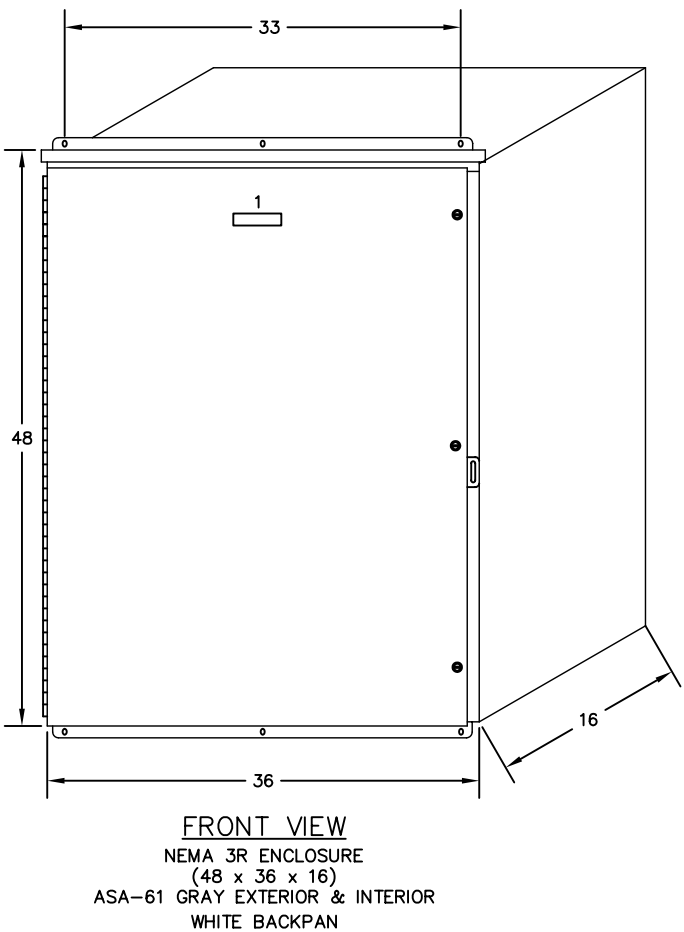
ELECTRICAL  
CONDUIT AND CABLE SCHEDULES

E-09

\$\$\$DATE\$\$\$  
\$\$\$USER\$\$\$





NAMEPLATE ENGRAVING SCHEDULE						
ITEM	DESCRIPTION	TAG NO.	QTY	LTR SIZE	N/P SIZE	INSCRIPTION
1	NAMEPLATE	—	1	1/4	1 x 4	GENERATOR CONNECTION PANEL
2	NAMEPLATE	—	1	1/8	.50 x 1	A
3	NAMEPLATE	—	1	1/8	.50 x 1	B
4	NAMEPLATE	—	1	1/8	.50 x 1	C
5	NAMEPLATE	—	1	1/8	.50 x 1	N
6	NAMEPLATE	—	2	1/8	.50 x 1	G



WIRING DIAGRAM

NO.	REVISIONS		BY	DATE	BENCH MARK ELEVATION _____ DATUM _____ DESCRIPTION _____ _____ _____ _____

DESIGN BY: J. CALTON
DRAWN BY: D. CRITE
CHECKED BY: K. PEARSON
SCALE:
DATE: 6/11/07
PROJECT NO: 1511331



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION

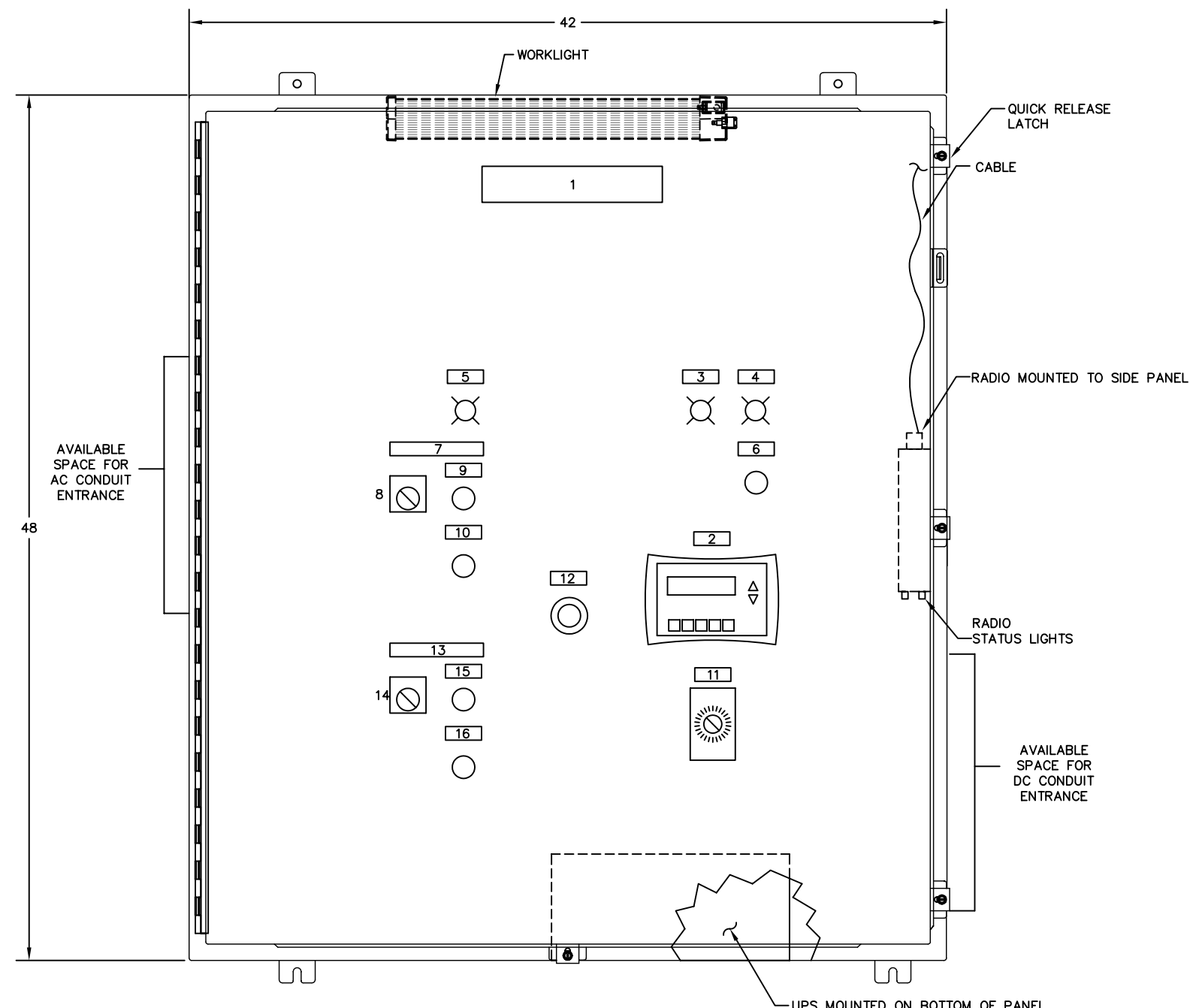
CONFORMED DRAWING

GENERATOR CONNECTION PANEL

E-10

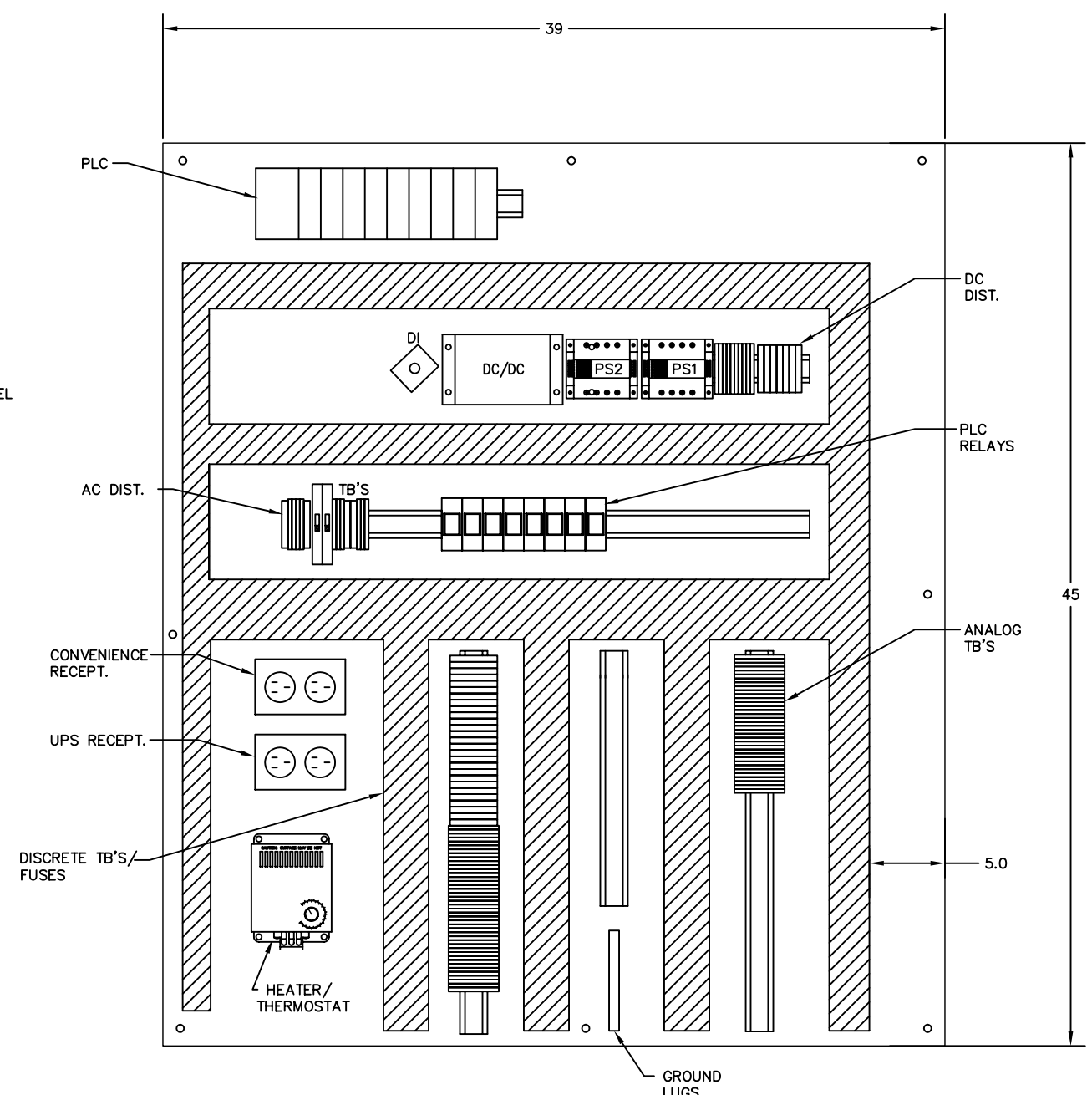


\$\$\$DATE\$\$\$  
\$\$\$USER\$\$\$



FRONT VIEW  
NEMA 4 ENCLOSURE  
(48 x 42 x 18)

SIDE VIEW



MTG PAN LAYOUT

- NOTES
1. FOR NAMEPLATE SCHEDULE SEE SHEET E-12
  2. PROVIDE DRAWING POCKET INSIDE PANEL. INCLUDE FINAL AS-BUILTS (11X17) AFTER TESTING AND START-UP IS COMPLETE

\$\$\$FILENAME\$\$\$

NO.	REVISIONS	BY	DATE

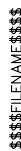
BENCH MARK	
ELEVATION	DATUM
DESCRIPTION	

DESIGN BY: J. CALTON
DRAWN BY: D. CRITE
CHECKED BY: K. PEARSON
SCALE:
DATE: 6/11/07
PROJECT NO: 1511331

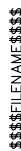
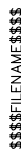


CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION

CONFORMED DRAWING
PLC CONTROL PANEL LAYOUT

\$\$\$FILENAME\$\$\$\$\$\$\$\$FILENAME\$\$\$\$\$\$\$\$FILENAME\$\$\$\$\$

\$\$\$FILENAME\$\$\$\$\$

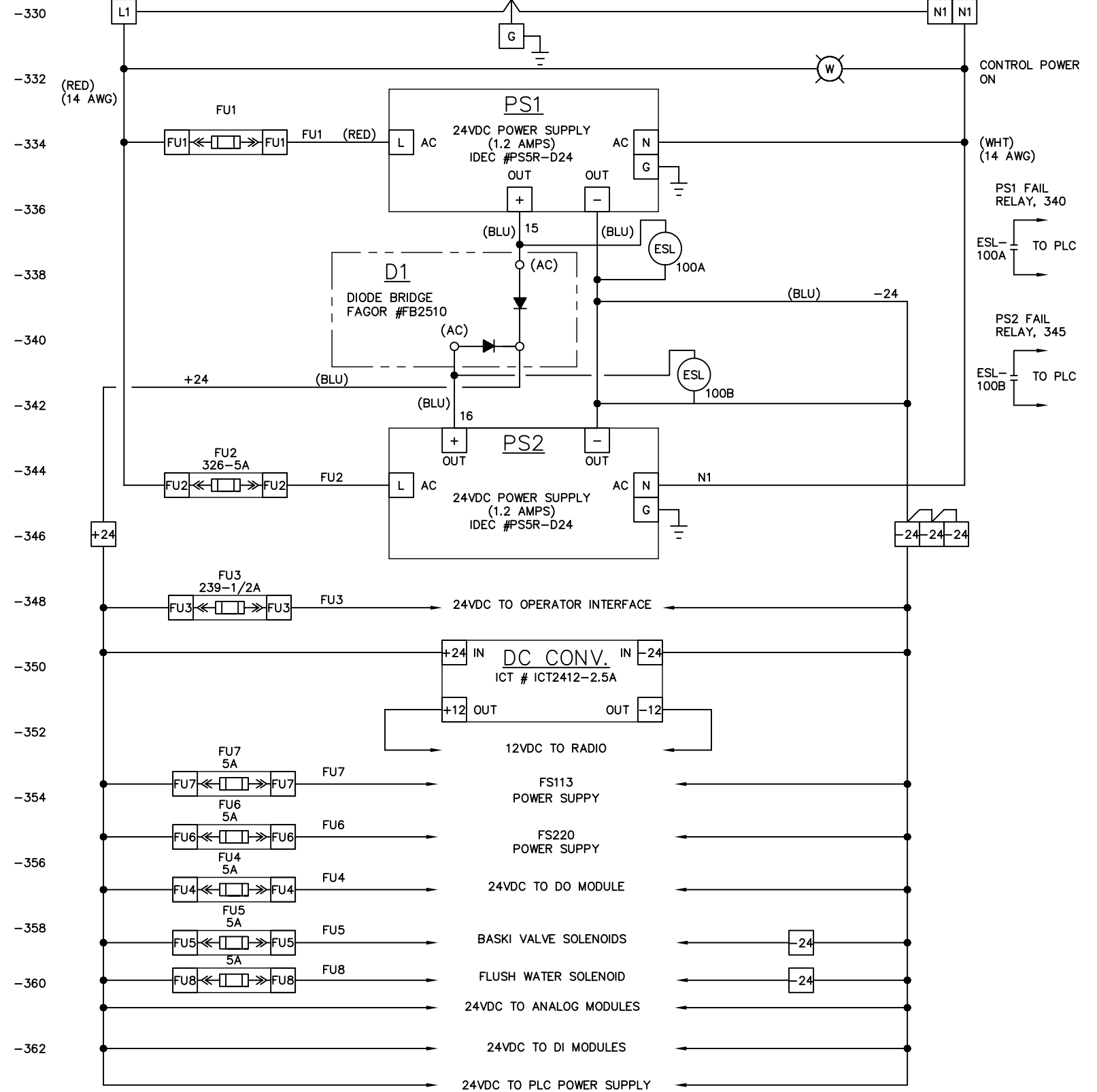


\$\$\$FILENAME\$\$\$\$\$

\$\$\$FILENAME\$\$\$\$\$

\$\$\$FILENAME\$\$\$\$\$

\$\$\$FILENAME\$\$\$\$\$



NO.	REVISIONS	BY	DATE

BENCH MARK	
ELEVATION _____ DATUM _____	
DESCRIPTION _____	
_____	
_____	
_____	
_____	

DESIGN BY: J. CALTON
DRAWN BY: D. CRITE
CHECKED BY: K. PEARSON
SCALE:
DATE: 6/11/07
PROJECT NO: 1511331



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION

CONFORMED DRAWING

## PLC CONTROL PANEL POWER DISTRIBUTION DIAGRAM

\$\$\$\$\$DATE\$\$\$\$\$  
\$\$\$\$\$USER\$\$\$\$\$  
\$\$\$\$\$FILENAME\$\$\$\$\$

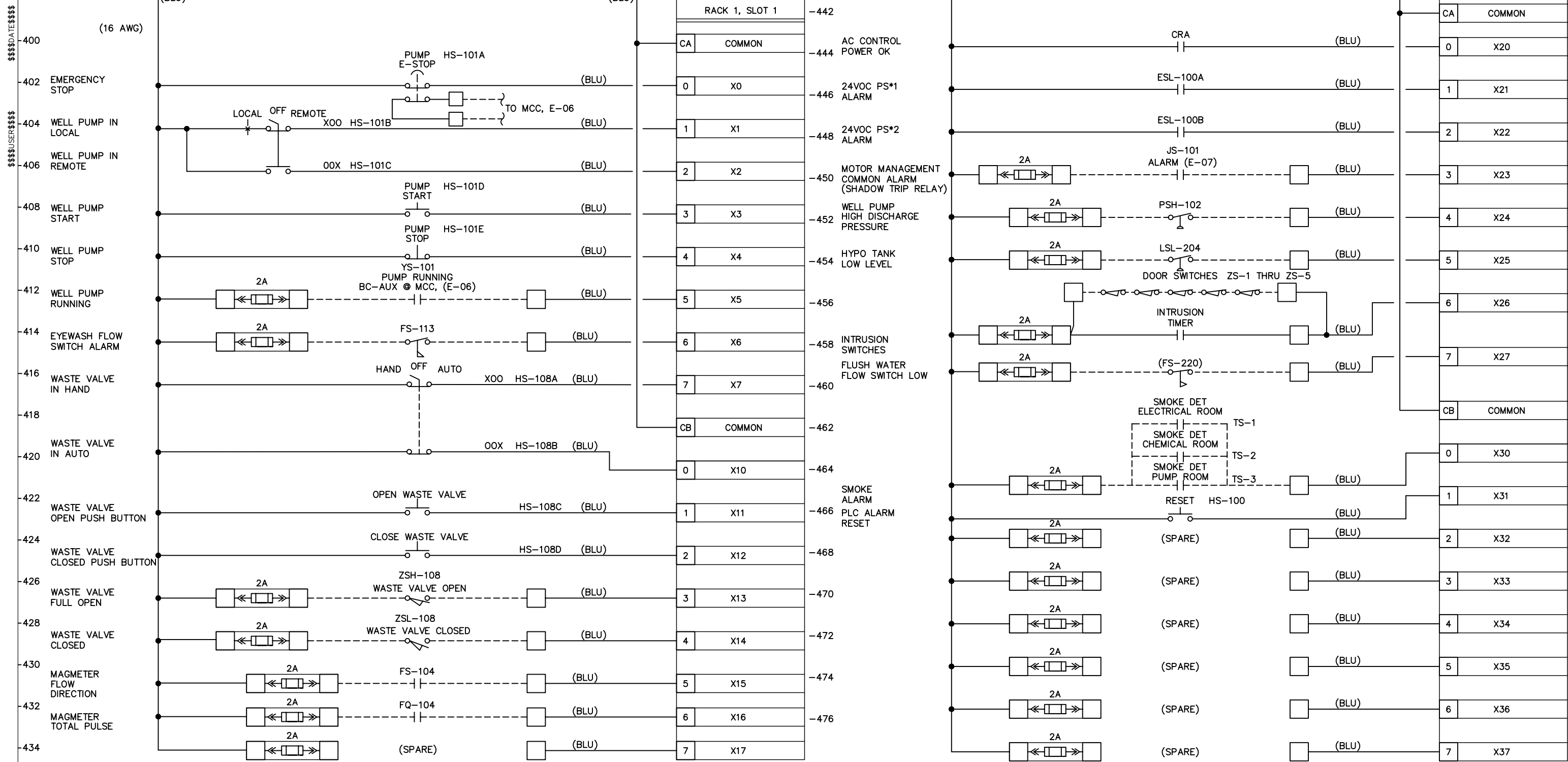
NO. REVISIONS BY DATE

BENCH MARK  
ELEVATION \_\_\_\_\_ DATUM \_\_\_\_\_  
DESCRIPTION \_\_\_\_\_  
DESIGN BY: J. CALTON  
DRAWN BY: D. CRITE  
CHECKED BY: K. PEARSON  
SCALE:  
DATE: 6/11/07  
PROJECT NO: 1511331

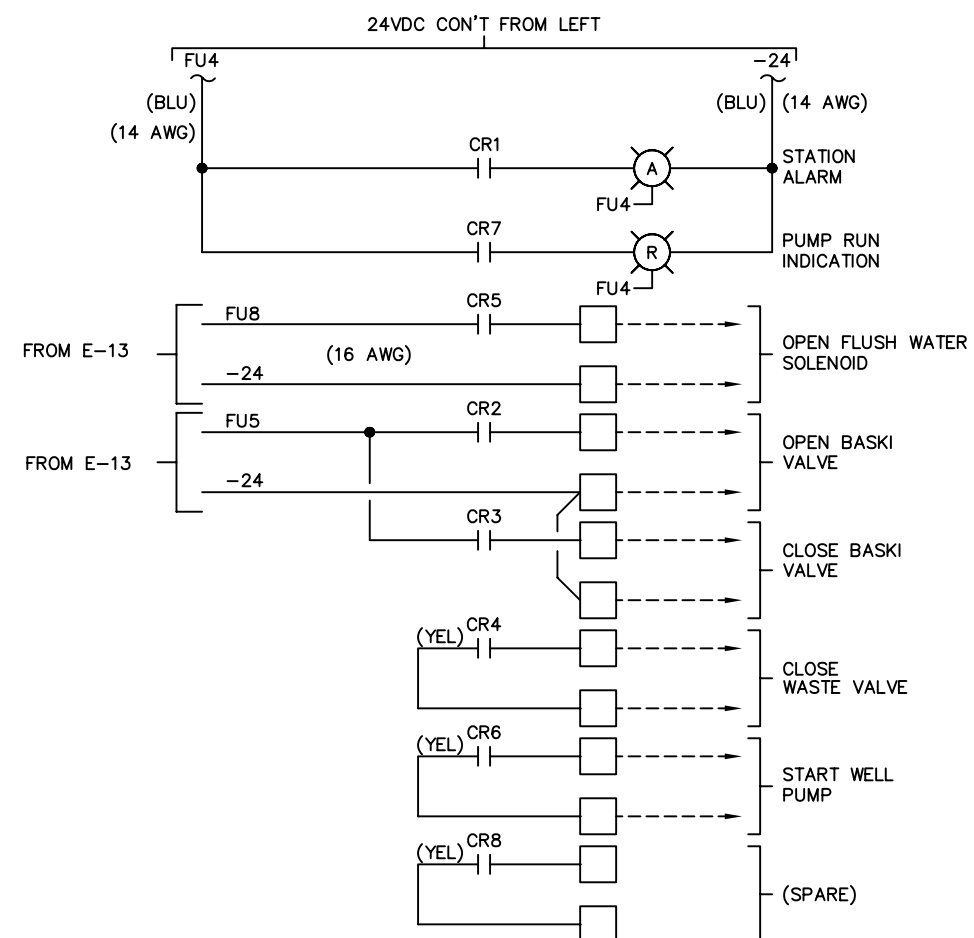


CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION

CONFORMED DRAWING  
PLC CONTROL PANEL  
DISCRETE INPUT



\$\$\$USER\$\$\$



BENCH MARK	ELEVATION _____	DATUM _____
DESCRIPTION _____		
_____		
_____		
_____		
_____		

DESIGN BY: J. CALTON
DRAWN BY: D. CRITE
CHECKED BY: K. PEARSON
SCALE:
DATE: 6/11/07
PROJECT NO: 1511331



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION

CONFORMED DRAWING

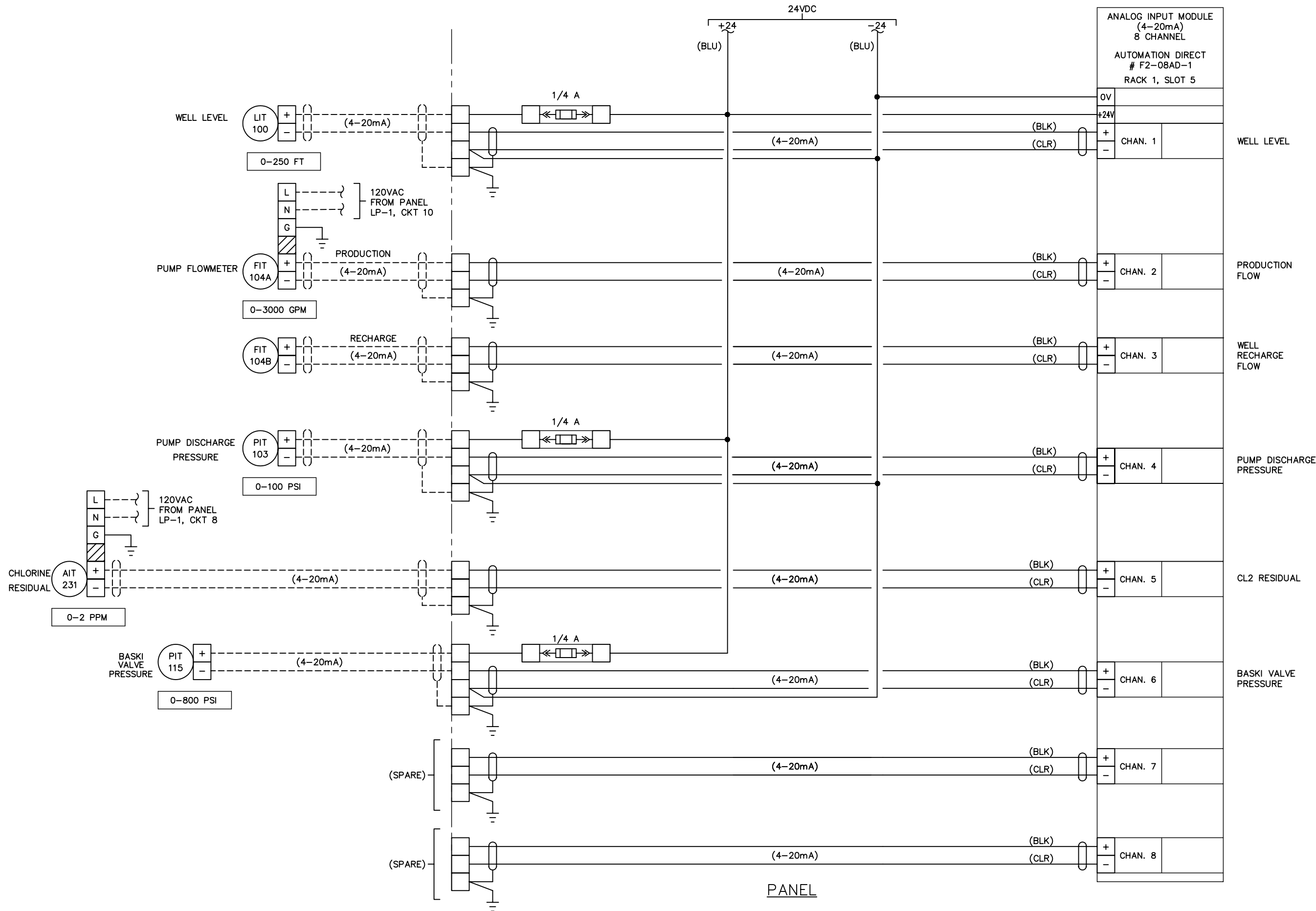
## PLC CONTROL PANEL DISCRETE OUTPUT

E-15

\$\$\$DATE\$\$\$

\$\$\$USER\$\$\$

\$\$\$FILENAME\$\$\$




NO.	REVISIONS	BY	DATE

BENCH MARK
ELEVATION _____ DATUM _____
DESCRIPTION _____

DESIGN BY: J. CALTON
DRAWN BY: D. CRITE
CHECKED BY: K. PEARSON
SCALE:
DATE: 6/11/07
PROJECT NO: 1511331



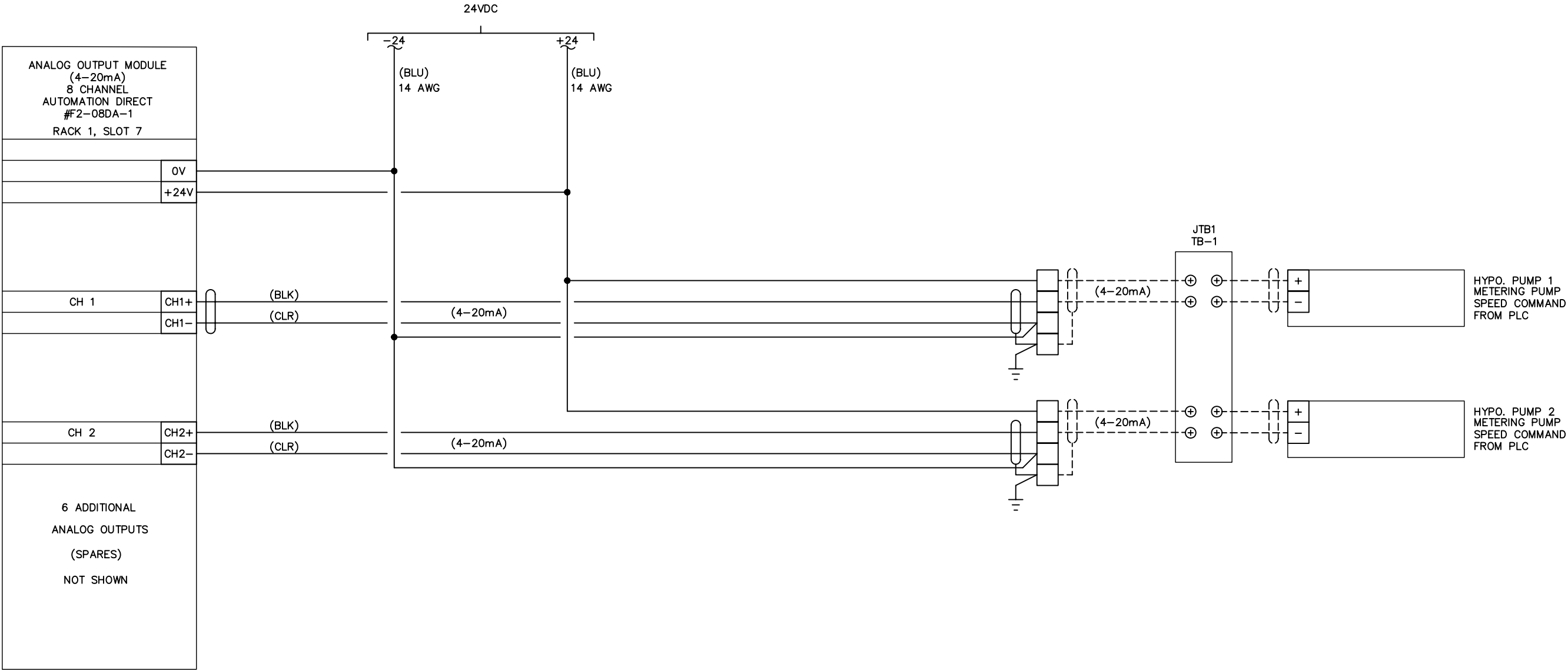


CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION

CONFORMED DRAWING	E-16
PLC CONTROL PANEL ANALOG INPUT	

\$\$\$\$DATE\$\$\$\$

\$\$\$\$USER\$\$\$\$



\$\$\$\$FILENAME\$\$\$\$

NO.	REVISIONS	BY	DATE

BENCH MARK
ELEVATION _____ DATUM _____
DESCRIPTION _____

DESIGN BY: J. CALTON
DRAWN BY: D. CRITE
CHECKED BY: K. PEARSON
SCALE:
DATE: 6/11/07
PROJECT NO: 1511331



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION

CONFORMED DRAWING
PLC CONTROL PANEL ANALOG OUTPUT



\$\$\$\$DATE\$\$\$\$

\$\$\$\$USER\$\$\$\$

CERTIFICATE OF COMPLIANCE

(Part 1 of 4)

LTG-1-C

PROJECT NAME  
Woodcreek North Pump Station, City of Roseville Utilities Dept

DATE  
March 22, 2006

PROJECT ADDRESS  
Placer County

PRINCIPAL DESIGNER-LIGHTING  
John Calton

TELEPHONE  
916 326-4475

DOCUMENTATION AUTHOR  
John Calton

TELEPHONE  
916 326 4475

Building Permit  
Checked by/Date  
Enforcement Agency Use

GENERAL INFORMATION

DATE OF PLANS  
BUILDING CONDITIONED FLOOR AREA  
CLIMATE ZONE

BUILDING TYPE  
NONRESIDENTIAL  
HIGH RISE RESIDENTIAL  
HOTEL/MOTEL GUEST

CONDITIONED SPACES  
UNCONDITIONED SPACES  
INDOOR / OUTDOOR SIGNS

PHASE OF CONSTRUCTION  
NEW  
ADDITION  
ALTERATION

METHOD OF COMPLIANCE  
PERFORMANCE  
COMPLETE BUILDING  
AREA CATEGORY  
TAILORED  
COMMON LIGHTING

STATEMENT OF COMPLIANCE  
This Certificate of Compliance lists the building features and performance specifications need to comply with Title 24, Parts 1 and 6 of the California Code of Regulations. This certificate applies only to building lighting requirements. The documentation preparer hereby certifies that the documentation is accurate and complete.

DOCUMENTATION AUTHOR  
John Calton

SIGNATURE  
DATE  
March 22, 2006

The Principal Lighting Designer hereby certifies that the proposed building design represented in this set of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application. The proposed building has been designed to meet lighting requirements contained in applicable parts of Sections 110, 119,130-132, 146, 148, & 149 of Title 24, Part 6.  
The plans & specifications meet the requirements of Part 6 (Sections 10-103a). The installation certificates meet the requirements of Part 6 (10-103a 3).  
The operation & maintenance information meet the requirements of Part 6 (10-103c).  
Please check one: (These sections of the Business and Professions Code are printed in full in the Nonresidential Manual.)  
I hereby affirm that I am eligible under the provisions of Division 3 of the Business and Professions Code to sign this document as the person responsible for its preparation; and that I am licensed in the State of California as a civil engineer or electrical engineer, or I am a licensed architect.  
I affirm that I am eligible under the provisions of Division 3 of the Business and Professions Code by section 5537.2 or 6737.3 to sign this document as the person responsible for its preparation; and that I am a licensed contractor performing this work.  
I affirm that I am eligible under Division 3 of the Business and Professions Code to sign this document because it pertains to a structure or type of work described as exempt pursuant to Business and Professions Code Sections 5537, 5538 and 6737.1.

PRINCIPAL LIGHTING DESIGNER-NAME  
John Calton

SIGNATURE

DATE  
Mar 22, 2006

LIC. #  
E-14099

LIGHTING MANDATORY MEASURES

Indicate location on plans of Note Block for Mandatory Measure  
E-18

LIGHTING COMPLIANCE FORMS & WORKSHEETS (check box if worksheet is included)

LTG-1-C, Parts 1 of 4 and 2 of 4  
LTG-1-C, Part 3 of 4  
LTG-1-C, Part 4 of 4  
LTG-2-C  
LTG-3-C  
LTG-4-C  
LTG-5-C  
LTG-6-C  
LTG-7-C  
LTG-6-C  
LTG-9-C  
OLTG-4-C

Certificate of Compliance. Part 1 of 4 and 2 of 4 are required for all submittals  
Certificate of Compliance. Part 3 of 4 submittal is required only if Control Credits are claimed  
Certificate of Compliance. Part 4 of 4 submittal is required when lighting controls are installed  
Indoor Lighting Schedule  
Portable Lighting Worksheet  
Lighting Controls Credit Worksheet  
Indoor Lighting Power Allowance  
Tailored Method Worksheet  
Room Cavity Ratio Worksheet  
Common Lighting Systems Method Worksheet  
Line Voltage Track Lighting Worksheet  
Signs (See OLTG-4-C Sign Worksheet in Chapter 6, Outdoor Lighting and Signs Chapter)

2005 Nonresidential Compliance Forms  
April 2005

CERTIFICATE OF COMPLIANCE

(Part 2 of 4)

LTG-1-C

PROJECT NAME  
WOODCREEK NORTH PUMP STATION

DATE  
March 22, 2006

INSTALLED INDOOR LIGHTING POWER FOR CONDITIONED AND UNCONDITIONED SPACES

INSTALLED LIGHTING, CONDITIONED SPACES (From LTG-2-C)  
PORTABLE LIGHTING (From LTG-3-C)  
LIGHTING CONTROL CREDIT, CONDITIONED SPACES (From LTG-4-C)  
CONDITIONED SPACE ADJUSTED INSTALLED LIGHTING POWER  
INSTALLED LIGHTING, UNCONDITIONED SPACES (From LTG-2-C)  
LIGHTING CONTROL CREDIT, UNCONDITIONED SPACES (From LTG-4-C)  
UNCONDITIONED SPACE ADJUSTED INSTALLED LIGHTING POWER

INSTALLED WATTS  
0  
+  
-  
=  
1840  
-  
=1840

ALLOWED INDOOR LIGHTING POWER FOR CONDITIONED SPACES  
COMPLETE BUILDING METHOD (from LTG-5-C)  
AREA CATEGORY METHOD (from LTG-5-C)  
TAILORED METHOD (from LTG-5-C)  
ALLOWED LIGHTING POWER

ALLOWED WATTS

ALTERNATE COMPLIANCE  
PERFORMANCE METHOD  
COMMON LIGHTING SYSTEM (from LTG-6-C)  
ALLOWED INDOOR LIGHTING POWER FOR UNCONDITIONED SPACES (From LTG-5-C)  
Watts

MANDATORY LIGHTING MEASURES FOR INDOOR LIGHTING AND DAYLIT AREAS

MANDATORY INDOOR AND DAYLIGHTING AUTOMATIC CONTROLS

CONTROL LOCATION  
(Room #, Area #, or Description)

CONTROL IDENTIFICATION

CONTROL TYPE  
(Auto Time Switch, Dimming, Photosensor, etc.)

SPACE CONTROLLED  
Lists the location of controlled lights

If Control Is for Daylighting

NOTE TO FIELD

Elec Room  
OS  
Occupancy Sensor  
Chemical Room  
OS  
Occupancy Sensor  
Pump Room  
OS  
Occupancy Sensor

2005 Nonresidential Compliance Forms  
April 2005

CERTIFICATE OF COMPLIANCE

(Part 4 of 4)

LTG-1-C

PROJECT NAME  
Woodcreek North Pump Station

DATE  
March 22, 2006

Designer:

This form is to be used by the designer and attached to the plans. Listed below are all the acceptance tests for lighting systems. The designer is required to check the boxes by all acceptance tests that apply and list all equipment that require an acceptance test. If all equipment of a certain type requires a test, list the equipment description and the number of systems to be tested in parentheses. The NJ number designates the Section in the Appendix of the Nonresidential ACM Manual that describes the test. Also indicate the person responsible for performing the tests (i.e. the installing contractor, design professional or an agent selected by the owner). Since this form will be part of the plans, completion of this section will allow the responsible party to budget for the scope of work appropriately.

Building Departments:

Systems Acceptance. Before an occupancy permit is granted for a newly constructed building or space, or a new space-conditioning system serving a building or space is operated for normal use, all control devices serving the building or space shall be certified as meeting the Acceptance Requirements for Code Compliance. In addition a Certificate of Acceptance, MECH-1-A, Forms shall be submitted to the building department that:  
A. Certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of §10-103(b) and Title 24 Part 6.

Test Description

Test Performed By:

LTG-2-A: Lighting Control Acceptance Document  
Occupancy Sensor Acceptance  
Manual Daylight Controls Acceptance  
Automatic Time Switch Control Acceptance  
Equipment requiring acceptance testing

LTG-3-A: Automatic Daylighting Controls Acceptance Document  
Equipment requiring acceptance testing

2005 Nonresidential Compliance Forms  
September 2005

INDOOR LIGHTING SCHEDULE

(Part 1 of 2)

LTG-2-C

PROJECT NAME

DATE

INSTALLED LIGHTING POWER FOR CONDITIONED SPACES

Luminaire

Lamps/Ballasts

Installed Watts

A

B

C

D

E

F

G

H

I

J

Name

Type Description

Lamp Type

Lamp

Number of Lamps per Luminaire

Watts For Lamp

Number of Ballast per Luminaire

Watts per Luminaire

CEC Default

If

Number of Luminaires

Installed Watts (H x I)

1

Surface mount fluorescent

T8

2

32

1

80

23

1840

PAGE TOTAL

BUILDING TOTAL (sum of all pages)

PORTABLE LIGHTING (From LTG-3-C)

CONTROL CREDIT (from LTG-4-C)

ADJUSTED ACTUAL WATTS

1840  
+  
+  
-  
=1840

2005 Nonresidential Compliance Forms  
September 2005

\$\$\$FILENAME\$\$\$

NO.	REVISIONS	BY	DATE		

BENCH MARK

ELEVATION \_\_\_\_\_ DATUM \_\_\_\_\_

DESCRIPTION \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

DESIGN BY: J. CALTON

DRAWN BY: D. CRITE

CHECKED BY: K. PEARSON

SCALE:

DATE: 6/11/07

PROJECT NO: 1511331

CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION

CONFORMED DRAWING  
ELECTRICAL  
LIGHTING TITLE 24

E - 18



\$\$\$\$DATE\$\$\$\$

\$\$\$\$USER\$\$\$\$

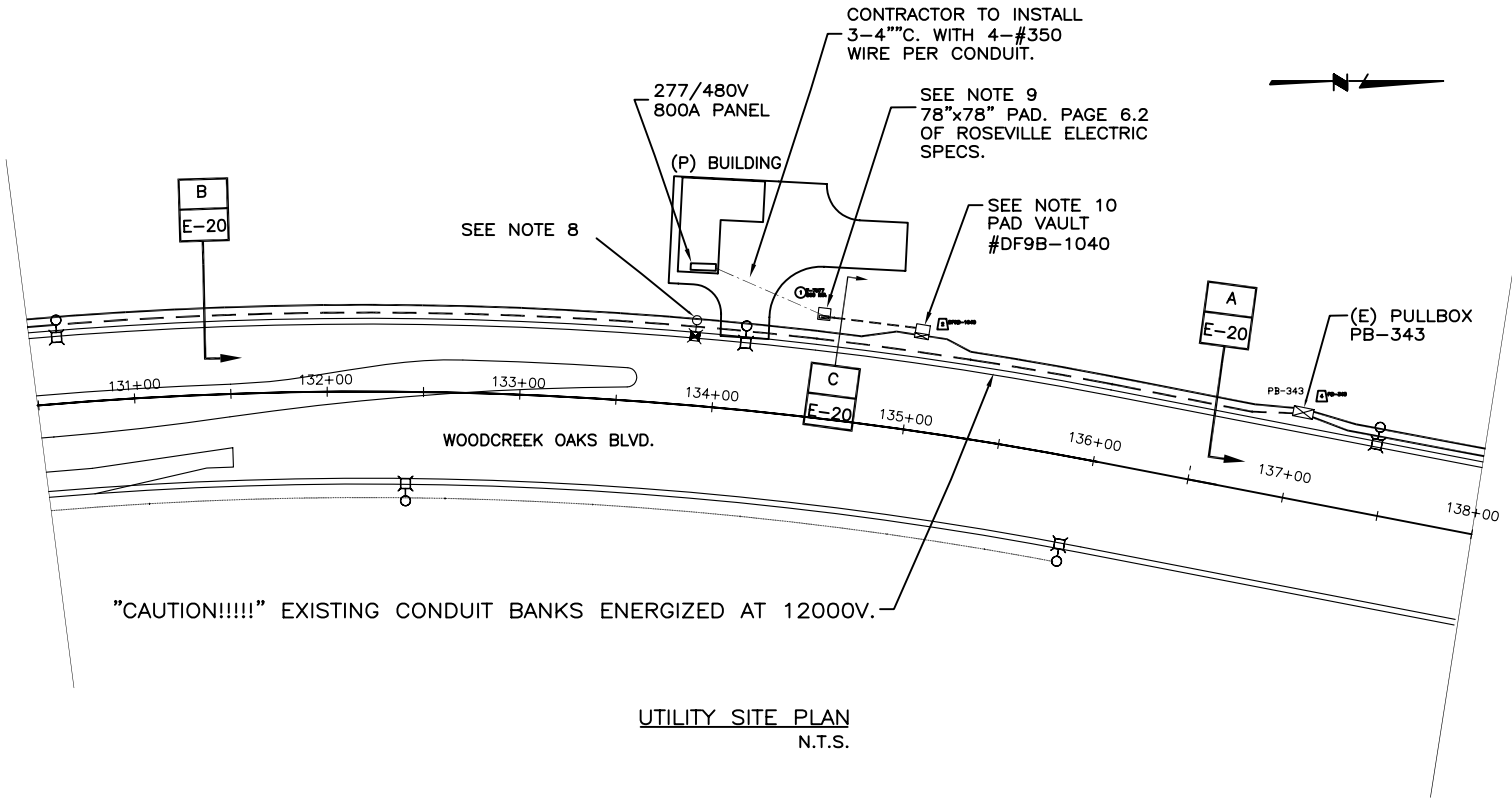
\$\$\$\$FILENAME\$\$\$\$

LEGEND:

- EXISTING STREET LIGHT
- PL. 250W 120V LUMINAIRE ON 35' MTG HGT  
STEEL STANDARD.
- EXISTING #9 STREET LIGHT SPLICE BOX.
- #9 STREET LIGHT SPLICE BOX
- PADMOUNT 3Ø TRANSFORMER
- PRIMARY 4'x4' JUNCTION BOX, 4-WAY 3Ø
- CONCRETE PAD VAULT
- CONCRETE 4' X 6' PULL BOX.
- SEE CORRESPONDING TRENCH DETAIL
- EXISTING CONDUIT & CONDUCTOR (SIZES AS PER NOTES)
- 4-4"C.S W/1-#750 MCM ALU. IN EACH
- 1-4"C. W/3-#1/0 PRI. URD CABLE
- SECONDARY CONDUIT AND CONDUCTOR BY DEV. PER N.E.C.
- 1-1 1/2" STREET LIGHT CONDUIT.

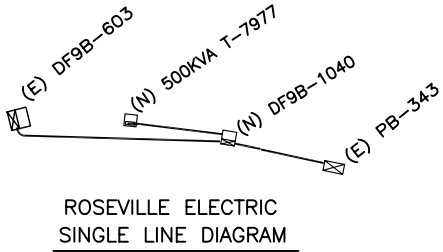
NOTES:

1. "CITY OF ROSEVILLE ELECTRIC DEPT SPECIFICATIONS FOR COMMERCIAL CONSTRUCTION" ARE A PART OF THESE CONSTRUCTION PLANS FOR THIS DESIGN AND SHALL BE ADHERED TO UNLESS OTHERWISE DIRECTED BY SPECIFIC COMMENTS OR DETAILS IN THESE PLANS.
2. A MINIMUM SEPARATION OF 12" WHEN PARALLELING AND BY AT LEAST 6" WHEN CROSSING IS REQUIRED BETWEEN ELECTRIC AND OTHER SUBSTRUCTURES (WATER, SEWER, STORM DRAIN, ETC). THIS SEPARATION MAY BE REDUCED TO 3" WHEN ELECTRIC CONDUITS ARE CONCRETE ENCASED AND APPROVED BY THE ELECTRIC DEPARTMENT INSPECTOR.
3. MINIMUM 12" SEPARATION BETWEEN ELECTRIC, TELEPHONE, GAS AND CABLE T.V. MAY NOT BE REDUCED UNLESS SPECIFICALLY APPROVED IN EACH INSTANCE BY THE UTILITIES INVOLVED.
4. CONTRACTOR TO PAY SPECIAL ATTENTION TO CROSSINGS WITH WATER MAINS, SAN. SEWER, DRAIN PIPES, AND ANY OTHER OBSTRUCTIONS. CONTRACTOR TO PROVIDE MIN. REQUIRED COVER FOR ALL UTILITIES WITH A SMOOTH TRANSITION OVER OR UNDER OBSTRUCTION AS DIRECTED AND APPROVED BY ALL UTILITIES INVOLVED. THE APPROACH AND DEPARTURE FOR AN OBSTRUCTION SHALL BEGIN AND END 100 LINEAL FEET AWAY FROM THE OBSTRUCTION.
5. TRENCH DETAILS SHOWN ON THESE PLANS ARE FOR ELECTRIC. IF OTHER UTILITIES REQUEST JOINT TRENCH OCCUPATION, THE TRENCH DIMENSIONS MAY BE MODIFIED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CO-ORDINATE SUCH REQUESTS TO THE SATISFACTION OF ALL THE UTILITIES INVOLVED.
6. CONTRACTOR SHALL INSURE THAT ALL TRENCHING AND INSTALLATION OF ELECTRIC FACILITIES CONFORMS TO CAL. O.S.H.A. AND THE STATE OF CALIFORNIA P.U.C. GENERAL ORDER NO. 128 REQUIREMENTS.
7. THE CITY OF ROSEVILLE IS A MEMBER OF THE UNDERGROUND SERVICE ALERT SYSTEM, CALL BEFORE YOU DIG !!! U.S.A. PHONE #800-642-2444  
CITY OF ROSEVILLE ELECTRIC DEPARTMENT DISPATCH PHONE #916-774-5620.
8. STA. 134+15 CONTRACTOR TO MOVE (E) ST. LIGHT SOUTH TO STATION 133+90. NEW BASE TO BE DRILLED, FORMED, PIPED AND POURED. AFTER CONCRETE CURES, CONTRACTOR TO MOVE EXISTING LIGHT BACK ONTO NEW BASE. INTERCEPT THE EXISTING 1 1/2"C."S, ELIMINATING EXISTING STREET LIGHT BASE, AND PULL 2 NEW #6 THHN CU. WIRES EACH DIRECTION. THE CONTRACTOR MUST ONLY MOVE (E) STREET LIGHT WHEN NEW BASE IS READY AND MUST FINISH RELOCAITON IN ONE DAY.



NOTES CONT'

9. CONTRACTOR TO PLACE NEW COMMERCIAL PAD FOR (N) 500KVA 277/480V 3Ø TRANSFORMER, T-7977, AT STA. 134.50, 12.5' FROM TBC. CONTRACTOR TO INSTALL 1-4"C. TO (N) DF9B-1040. ROSEVILLE ELECTRIC TO PLACE (N) TRANSFORMER AND PULL 3-#1/0 PRIMARY CABLE.
10. ROSEVILLE ELECTRIC TO REMOVE 3-75MCM MAINLINE FROM DF9B-603 TO PB-343. CONTRACTOR TO PLACE (N) PAD VAULT AT STA. 135+00, SEE DETAIL SHEET E-20, BREAK INTO MAINLINE FROM DF9B-603 TO PB-343, INTERCEPT MAINLINE, PLACE NEW CONDUITS TO NEW DF9B-1040 VAULT. CONTRACTOR TO PROVE NEW CONDUITS WITH RE INSPECTORS PRESENT. RE WILL THEN PLACE NEW SWITCHGEAR AND PULL 3-750MCM MAINLINE BOTH DIRECTIONS FROM NEW SWITCHGEAR.
11. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH ROSEVILLE ELECTRIC. CONTRACTOR TO INTERCEPT EXISTING DUCTBANK AND REROUTE TO CONTRACTOR FURNISHED PAD VAULT. CONTRACTOR TO INSTALL 1'-4" BETWEEN PAD VAULT AND TRANSFORMER PAD, WHICH IS CONTRACTOR PROVIDED. CONTRACTOR TO INSTALL SECONDARY CONDUITS AND CABLES.



MWH



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION

CONFORMED DRAWING  
ELECTRICAL  
ROSEVILLE ELECTRIC POWER  
DETAIL - I

E-19

1	NOTE 8, CHANGE "143.15" TO "134+15"	EAG	6/07
NO.	REVISIONS	BY	DATE

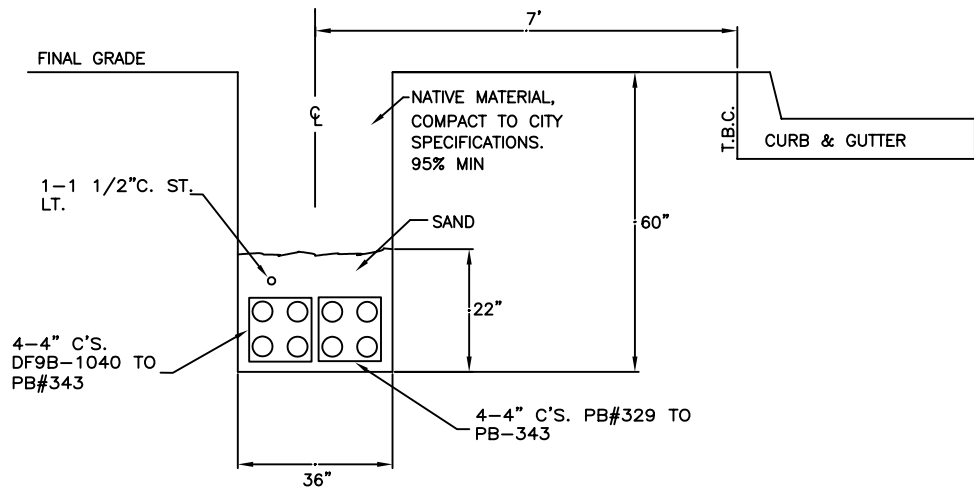
BENCH MARK
ELEVATION _____ DATUM _____
DESCRIPTION _____
_____
_____
_____

DESIGN BY: J. CALTON  
DRAWN BY: D. CRITE  
CHECKED BY: K. PEARSON  
SCALE:  
DATE: 6/11/07  
PROJECT NO: 1511331

\$\$\$DATE\$\$\$

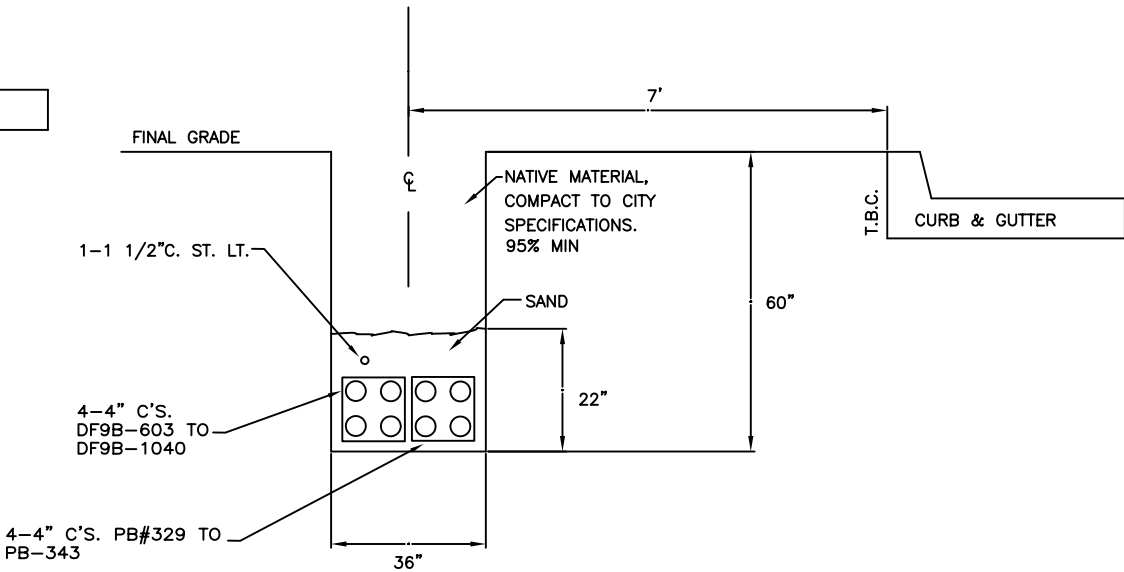
\$\$\$USER\$\$\$

\$\$\$FILENAME\$\$\$



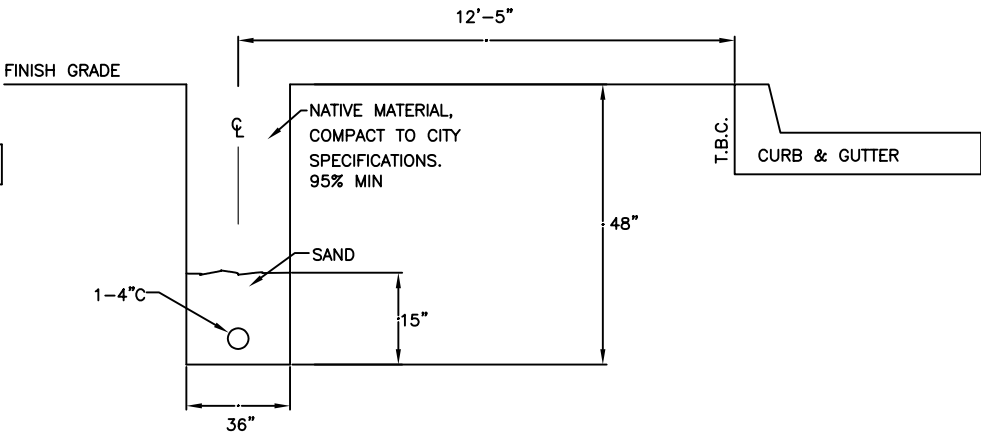
TRENCH DETAIL A-A

N.T.S.



TRENCH DETAIL B-B

N.T.S.

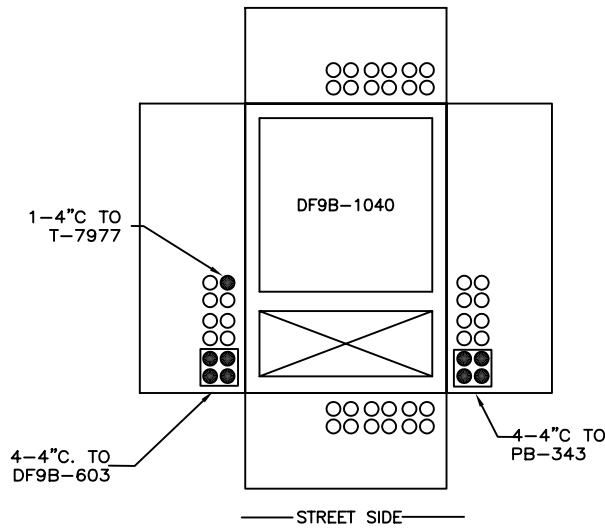


TRENCH DETAIL C-C

N.T.S.

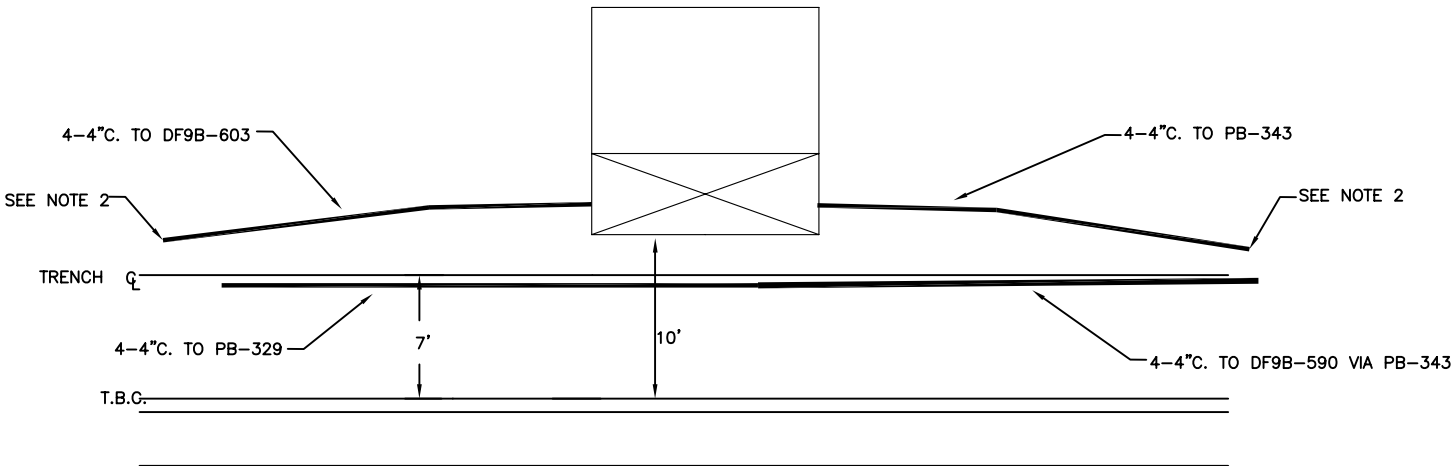
NOTES:

- PAD VAULT DF9B-1040 IS 6'Wx12'Lx7'D, REFER TO PAGE 4.6 IN ROSEVILLE ELECTRIC SPECIFICATIONS.
- CONTRACTOR SHALL EXPOSE AND INTERCEPT EXISTING ROSEVILLE ELECTRIC CONDUITS. ROUTE NEW CONDUITS TO CONTRACTOR SUPPLIED PAD VAULT.



DETAIL PAD VAULT #DF9B-1040

STA. 135+00, WOODCREEK OAKS BLVD. N.T.S.



WOODCREEK OAKS BLVD.

PAD VAULT #DF98-1040 PLACEMENT DETAIL

N.T.S.

BENCH MARK	
ELEVATION _____ DATUM _____	
DESCRIPTION _____	
_____	
_____	
_____	
_____	
NO.	REVISIONS
BY	DATE

DESIGN BY: J. CALTON  
DRAWN BY: D. CRITE  
CHECKED BY: K. PEARSON  
SCALE:  
DATE: 6/11/07  
PROJECT NO: 1511331



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION

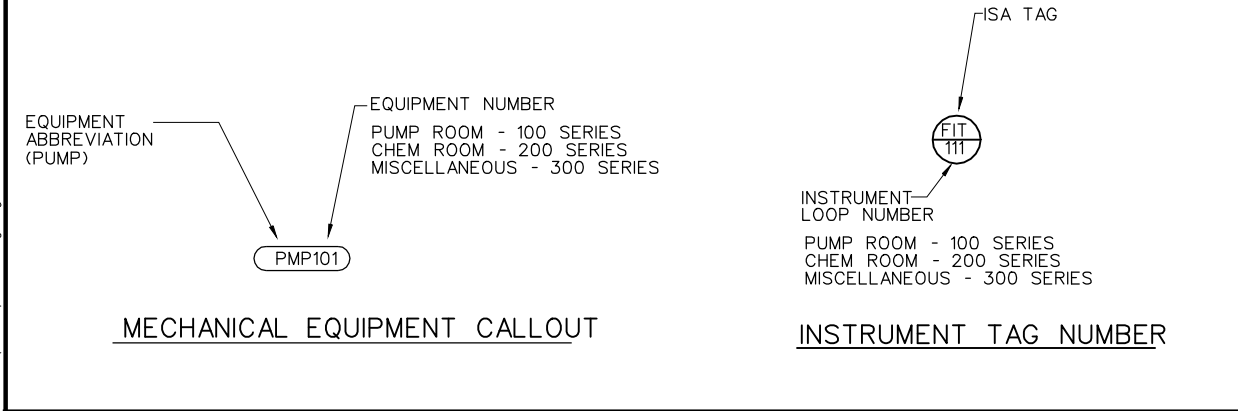
CONFORMED DRAWING  
ELECTRICAL  
ROSEVILLE ELECTRIC POWER  
DETAILS - II

INSTRUMENTATION SYMBOLS

SUPERVISORY CONTROL, ALARM, & DATA  
AQUISITION SYMBOLS

INSTRUMENT IDENTIFICATION TAG LETTERS

	INSTRUMENT OR OTHER COMPONENT TO BE MOUNTED IN THE FIELD		GENERALIZED FOR COMPLEX INTERLOCK LOGIC-SEE SCHEMATICS OR SPECIFICATIONS
	INSTRUMENT OR OTHER COMPONENT TO BE MOUNTED INSIDE MAIN CONTROL BOARD (MCB) OR OTHER PANEL AS MARKED		PNEUMATIC PRESSURE (P) SIGNAL
	INSTRUMENT OR OTHER COMPONENT TO BE MOUNTED ON MCB FRONT PANEL OR OTHER PANEL AS MARKED		INDICATES QUANTITY OF SIGNALS (THREE)
	SINGLE INSTRUMENT OR OTHER COMPONENT HAVING MULTIPLE FUNCTIONS		ELECTRIC SIGNAL
	INSTRUMENT OR OTHER COMPONENT TO BE FURNISHED AND INSTALLED BY OTHERS IN THE FUTURE		HYDRAULIC LINE
	INSTRUMENT OR OTHER COMPONENT TO BE MOUNTED ON FRONT OF LOCAL CONTROL PANEL (LCP)		MAIN PROCESS PIPING
	INSTRUMENT OR OTHER COMPONENT TO BE MOUNTED INSIDE LOCAL CONTROL PANEL (LCP)		SONIC SIGNAL
	INDICATING LIGHT MOUNTED IN THE FIELD; MAY BE MOUNTED ON A CONTROL STATION		CAPILLIARY TUBING (FILLED SYSTEM)
	INDICATING LIGHT MOUNTED ON THE FRONT OF A LOCAL CONTROL PANEL (LCP)		POWER SUPPLY AS NOTED (24VDC; ETC)
	HIGH/LOW SELECTOR		AIR SUPPLY (20 PSIG-EXCEPT AS NOTED)
	RELATED DEVICE PERFORMS LINEARIZING OR SQUARE ROOT FUNCTION		PRIMARY ELECTRICAL SUPPLY FOR INSTR (120V/60HZ)UNLESS OTHERWISE NOTED
	RELATED DEVICE PERFORMS MULTIPLYING, SUMMATION, OR DIVISION FUNCTION		INDICATES VENDOR PACKAGE
			CABLE(MULTICONDUCTOR OR COAXIAL) FURNISHED WITH EQUIPMENT
			EXISTING ITEM
			FUTURE ITEM
			EXISTING ITEM TO BE RELOCATED



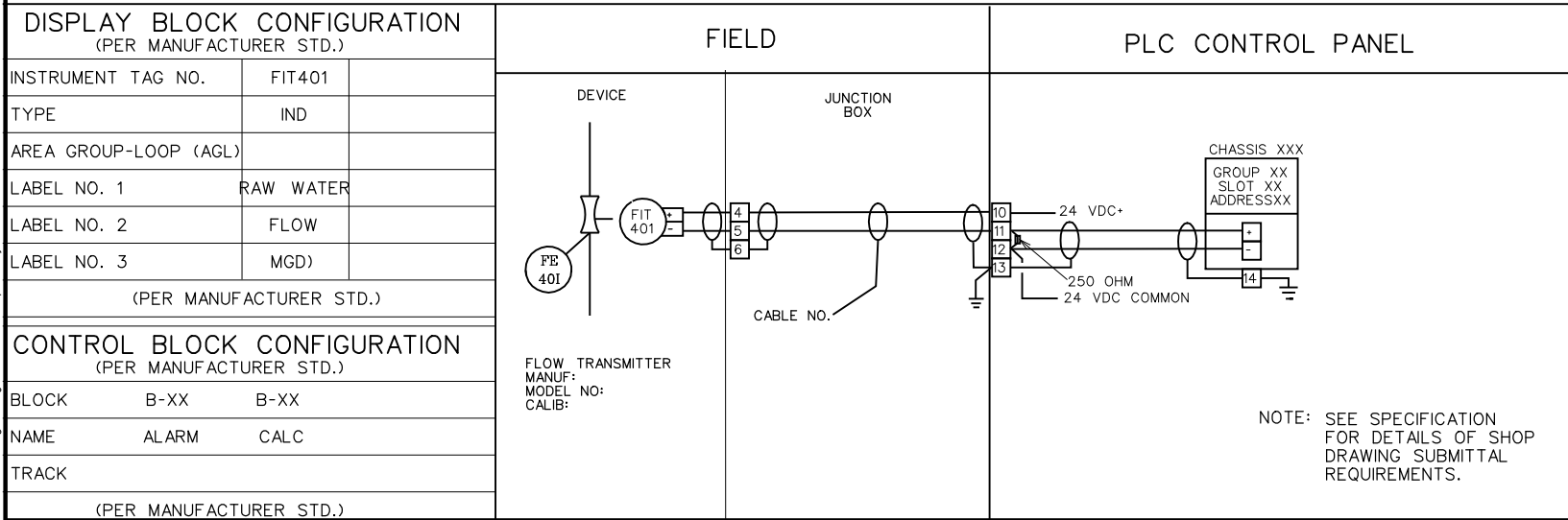
	INDICATOR/CONTROLLER/RECORDER OR ALARM NORMALLY ACCESSIBLE TO OPERATOR FROM MMI.
	INTERNAL FUNCTION NOT NORMALLY ACCESSIBLE TO OPERATOR
	DATA LINK
	PLC / REMOTE I/O POINT
	GENERALIZED FOR COMPLEX INTERLOCK LOGIC PERFORMED IN SOFTWARE. SEE SCHEMATICS OR SPECIFICATIONS FOR DETAILS.

MISCELLANEOUS ABBREVIATIONS

AM	AUTO/MANUAL	MCC	MOTOR CONTROL CENTER
ATM	ATMOSPHERE	MMI	MAN-MACHINE INTERFACE
CB	CIRCUIT BREAKER	NOR/BU	NORMAL/BACKUP
DEV	DEVIATION	N.C.	NORMALLY CLOSED
F.C.	FAIL CLOSED	N.O.	NORMALLY OPEN
F.O.	FAIL OPEN	OC	OPEN/CLOSE
F/O/S	FAST/OFF/SLOW	OL	OVERLOAD
FR	FORWARD/REVERSE	OLH	OFF/LOW/HIGH
HA	HAND/AUTOMATIC	OSC	OPEN/STOP/CLOSE
HOA	HAND/OFF/AUTOMATIC	PCT	PERCENT
HOR	HAND/OFF/REMOTE	PLC	PROGRAMMABLE CONTROLLER
HYD	HYDRAULIC	POT.	POTENTIONMETER
ID	INCREASE/DECREASE	RDY	READY
I/I	CURRENT AMPLIFIER	REM	REMOTE
IOE	INTERNAL/OFF/EXTERNAL	RSL	RAISE/STOP/LOWER
KO	TIMER/OFF	RTU	REMOTE TERMINAL UNIT
I/P	CURRENT TO PNEUMATIC	SD	SHUTDOWN
LCB	LOCAL CONTROL BOARD	SEL	SELECT
LCP	LOCAL CONTROL PANEL	S/M	STROKES/MINUTE
LOA	LOCAL/OFF/AUTO	SOF	SLOW/OFF/FAST
LOR	LOCAL/OFF/REMOTE	SP	SET POINT
LOS	LOCK/OUT/STOP	S/S	START/STOP
L/R	LOCAL/REMOTE	TOR	TEST/OFF/RTU
MCB	MAIN CONTROL BOARD	TSP	TWISTED SHIELD PAIR
		VFD	VARIABLE FREQUENCY DRIVE

LETTER	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER FLAME		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	CONDUCTIVITY (ELECTRICAL)			CONTROLLER	
D	DENSITY	DIFFERENTIAL			
E	VOLTAGE (EMF)		PRIMARY ELEMENT		
F	FLOW/FUEL	RATIO			
G	GAGING (DIMENSIONAL)		GLASS		
H	HAND (MANUALLY INITIATED)				HIGH
I	CURRENT (ELEC)		INDICATE		
J	POWER	SCAN			
K	TIME OR TIME SCHEDULE			CONTROL STA	
L	LEVEL		LIGHT(PILOT)		LOW
M	MOISTURE OR HUMIDITY				MIDDLE OR INTERMEDIATE
N	TORQUE		ISOLATOR		
O	USER'S CHOICE		ORIFICE		
P	PRESSURE OR PNEUMATIC		POINT		
Q	QUANTITY	INTEGRATE TOTALIZE			
R	RADIOACTIVITY		RECORD OR PRINT		
S	SPEED / FREQUENCY			SWITCH	
T	TEMPERATURE			TRANSMITTER	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VISCOSITY			VALVE DAMPER OR LOUVER	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED		UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT STATE OR PRESENCE			RELAY OR COMPUTE	
Z	POSITION				
H2S	HYDROGEN SULFIDE		O <sub>3</sub>	OZONE	
LEL	LOWER EXPLOSIVE LIMIT		D.O.	DISSOLVED OXYGEN	
pH	HYDROGEN ION CONCENTRATION		SCU	STREAMING CURRENT UNIT	
Tu	TURBIDITY		UPS	UNINTERRUPTIBLE POWER SUPPLY	
SS	SUSPENDED SOLIDS				
O <sub>2</sub>	OXYGEN CONCENTRATION				
SCD	STREAMING CURRENT DETECTOR				

SAMPLE LOOP DIAGRAM - MINIMUM REQUIRED

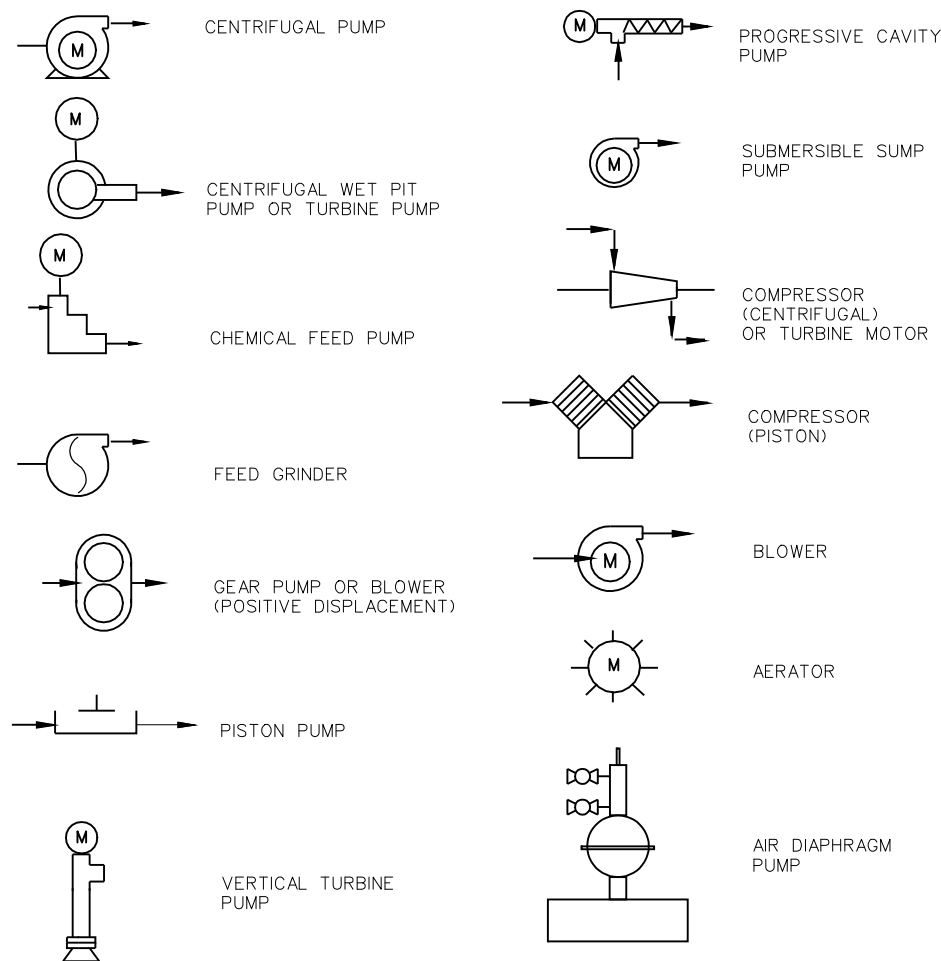


NOTES

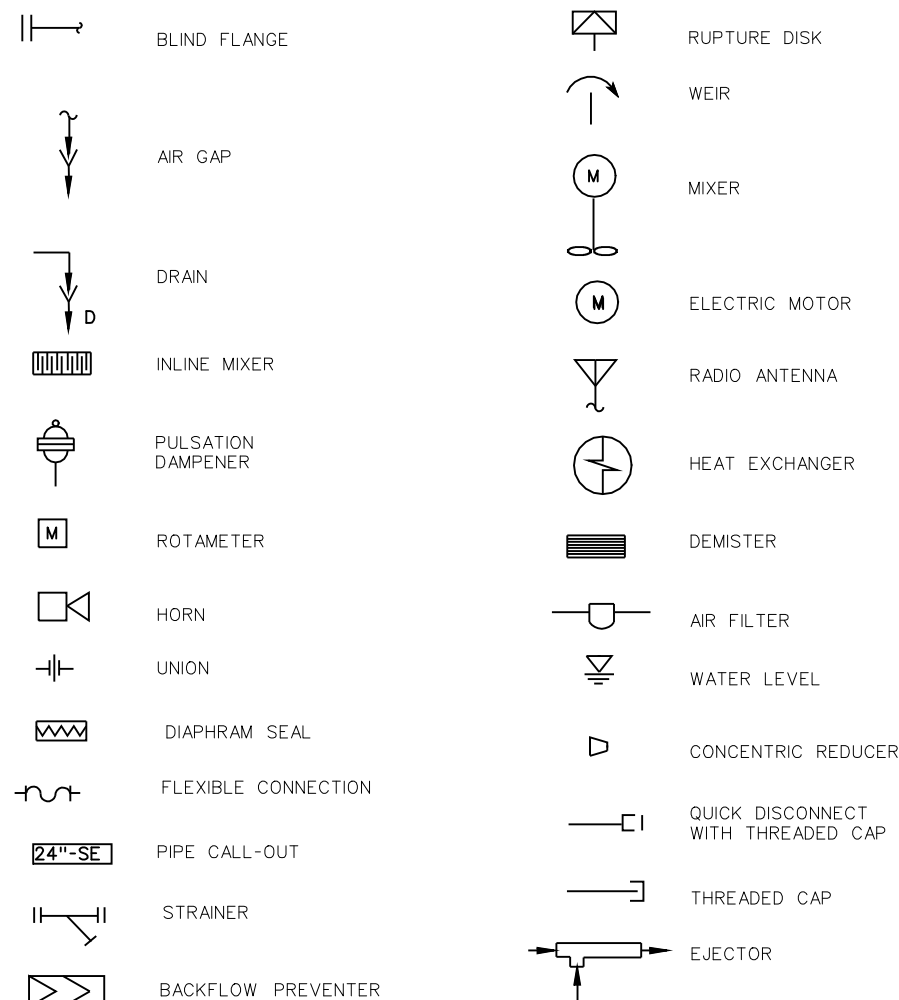
- ADDITIONAL INSTRUMENTATION AND CONTROL SYMBOLS MAY BE USED AS REQUIRED. SYMBOLS AND NOMENCLATURE ARE BASED ON ISA STANDARD S 5.1.
- SEE ASSOCIATED ELECTRICAL AND MECHANICAL SYMBOL SHEETS FOR ADDITIONAL SYMBOLS AND ABBREVIATIONS.
- FOR DETAILS OF METERS AND OTHER MECHANICAL EQUIPMENT (e.g. VALVES, PUMPS, ETC.) SEE MECHANICAL DRAWINGS AND SPECIFICATIONS.
- SYSTEM INTEGRATOR TO MEET THE PARTICULAR CHARACTERISTICS (e.g. VOLTAGE AND CURRENT REQUIREMENTS) OF COMPONENTS IN EACH LOOP OR SYSTEM.
- ALL FIELD SWITCHES FOR ELECTRIC MOTOR OPERATION WILL BE SUPPLIED BY THE ELECTRICAL SUBCONTRACTOR. EXCEPTIONS ARE WHEN SWITCHES ARE MOUNTED ON PANELS OR PART OF VENDOR PACKAGES. ALL ELECTRIC ACUATORS ON VALVES AND GATES ARE SUPPLIED WITH THE EQUIPMENT BY THE EQUIPMENT SUPPLIERS.
- BYPASS KEY SWITCHES ARE NOT SHOWN ON THE P&ID'S. REFER TO THE ELECTRICAL SCHEMATICS.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

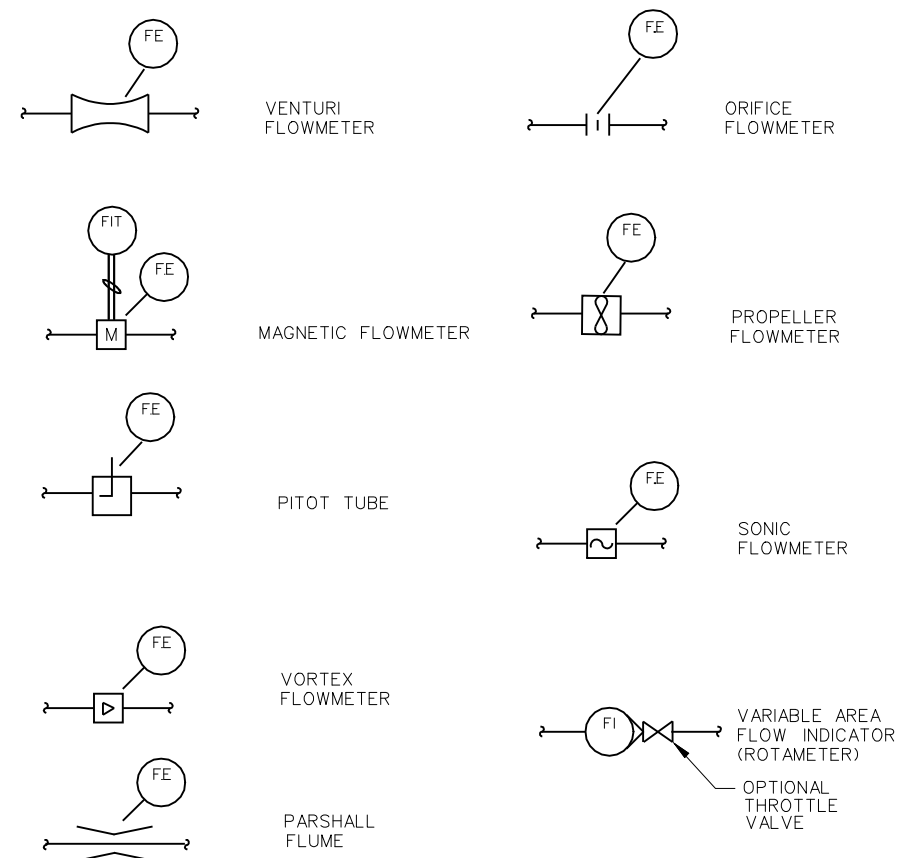
## PUMP AND COMPRESSOR SYMBOLS



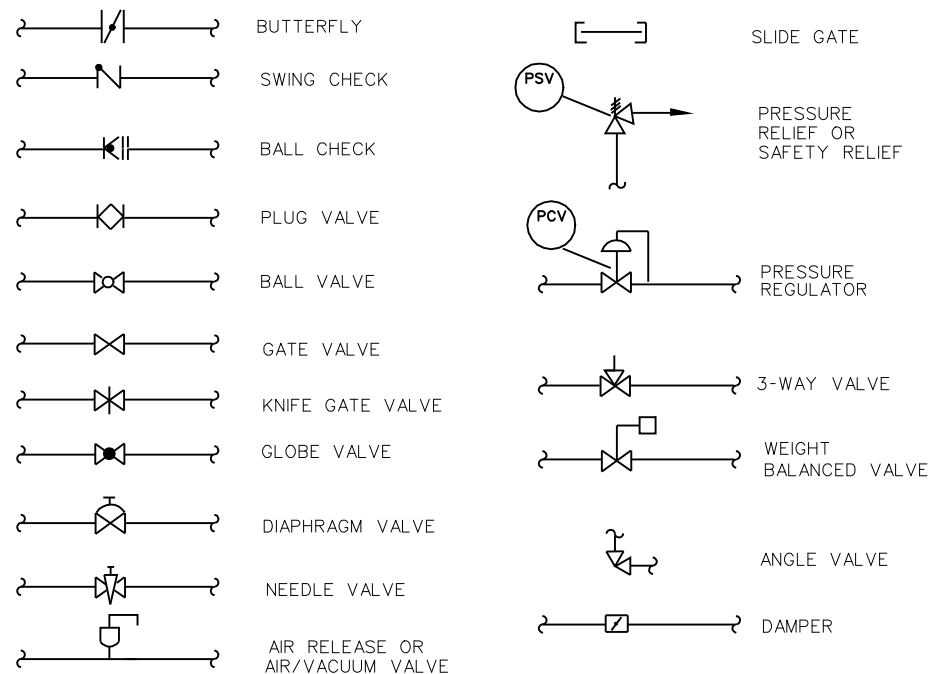
## MISCELLANEOUS SYMBOLS



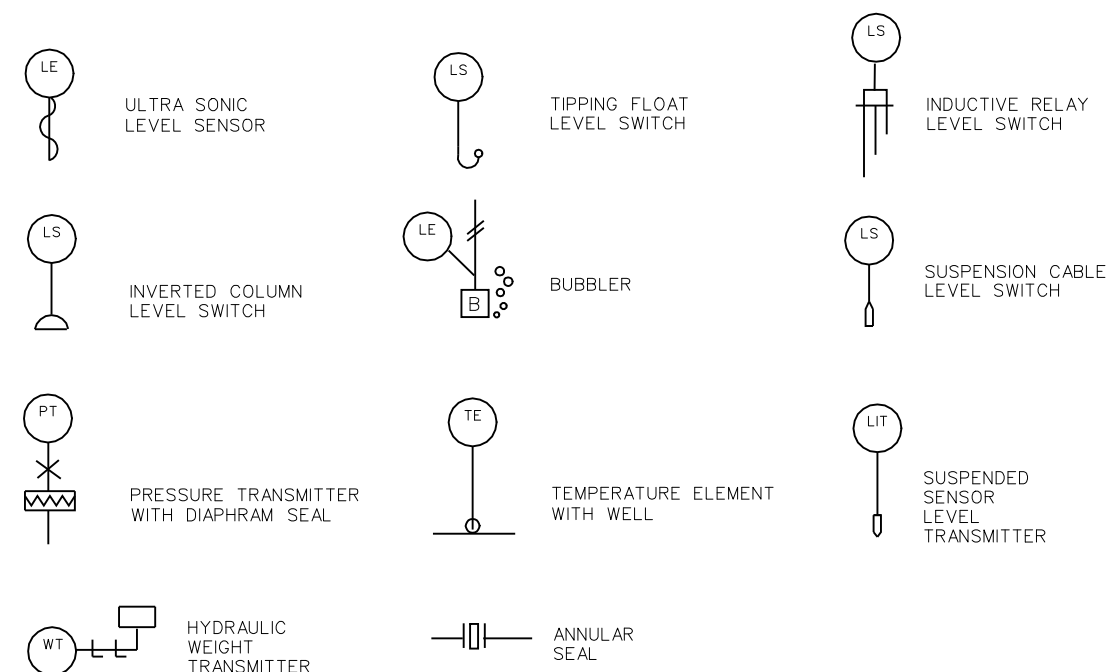
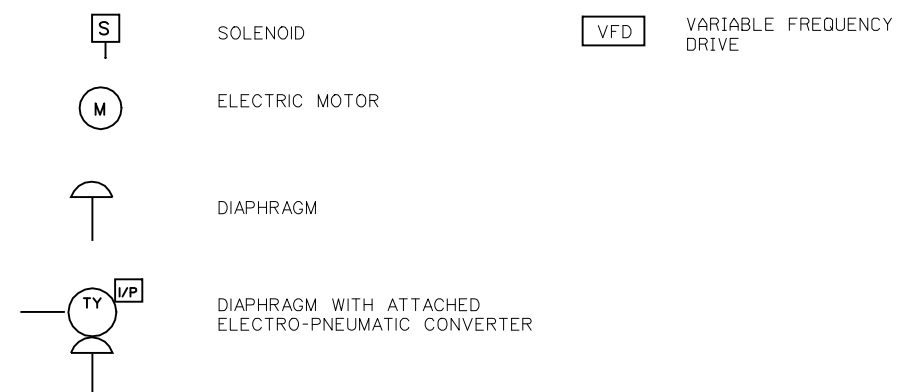
## PRIMARY ELEMENT SYMBOLS



## VALVE SYMBOLS



## VALVE ACTUATORS



Revision Comments			
NO.	REVISIONS	BY	DATE

BENCH MARK	ELEVATION _____	DATUM _____
DESCRIPTION _____		
_____		
_____		
_____		
_____		

J. CALTON  
DRAWN BY: D. CRITE  
CHECKED BY: K. PEARSON  
SCALE: NONE  
DATE: 10/6/06  
PROJECT NO: 1511331



CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING

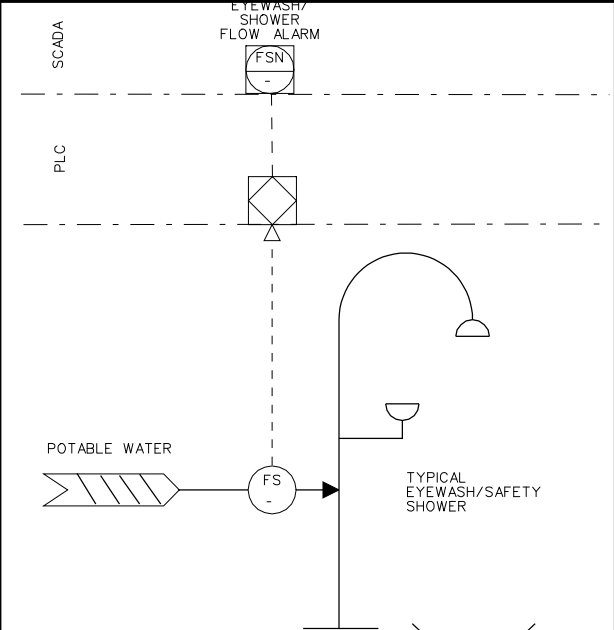
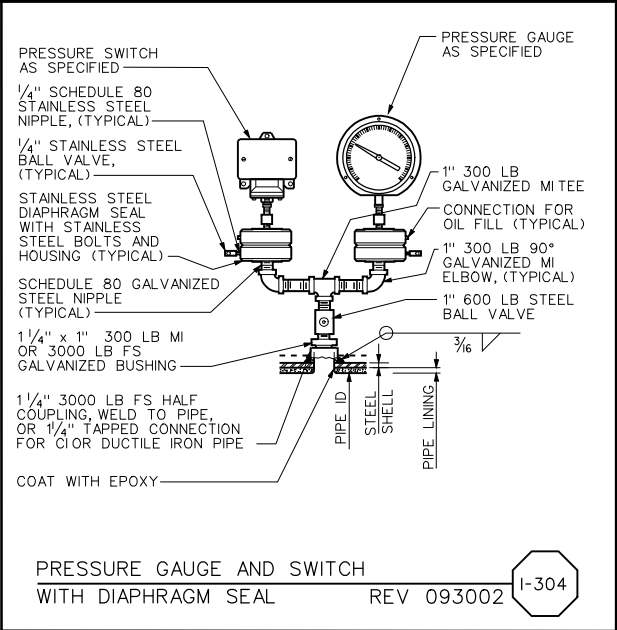
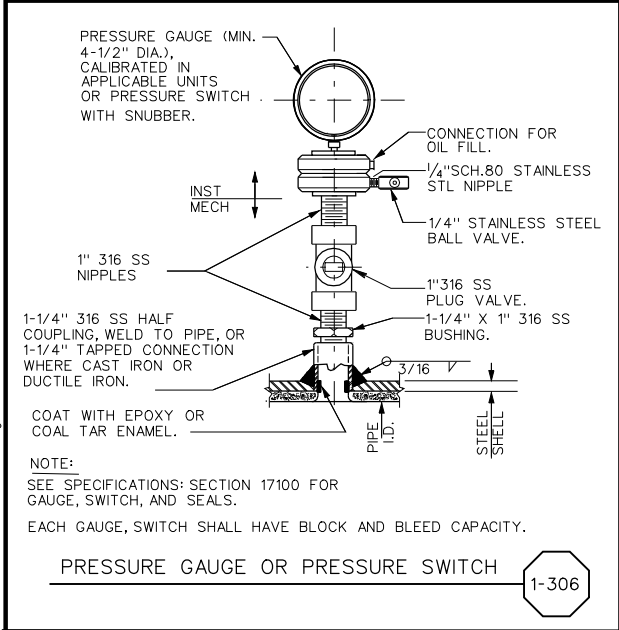
INSTRUMENTATION  
PROCESS SYMBOLS

GI-02

Plot Date: 13-JUN-2007 15:26

User: egosse

File: C:\Documents and Settings\egosse\Desktop\Project Transfer\Files\Woodcreek Transfer\WDCK\_Export\port\wcng13.dgn



TAGGING SCHEDULE		
LOCATION	FLOW SWITCH TAG NO.	SCADA TAG
CHEMICAL FEED AREA	FS 220	

NO.	REVISIONS	BY	DATE

BENCH MARK	
ELEVATION _____ DATUM _____	
DESCRIPTION _____	
_____	
_____	
_____	

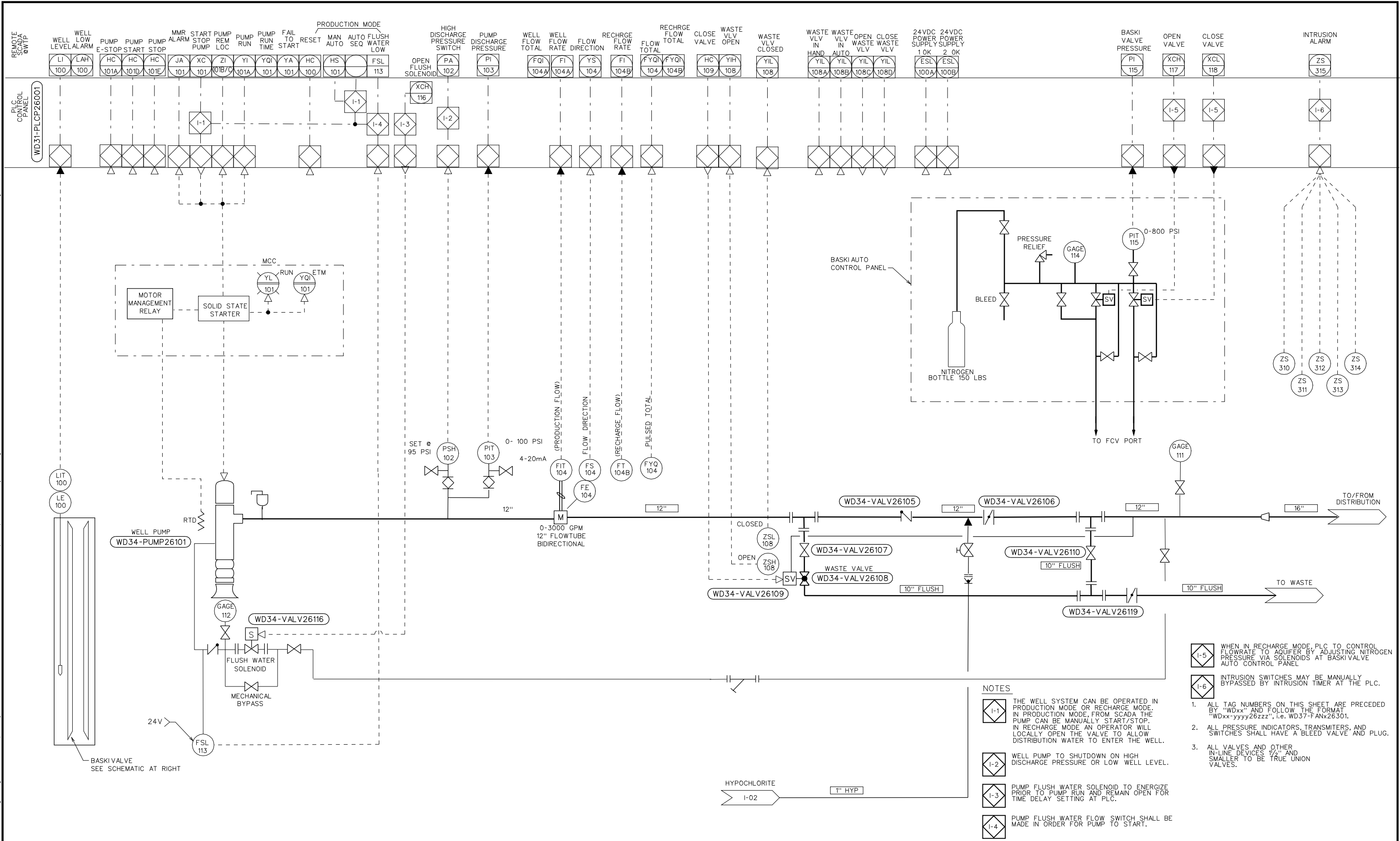
J. CALTON
DRAWN BY: D. CRITE
CHECKED BY: K. PEARSON
SCALE: NONE
DATE: 10/6/06
PROJECT NO: 1511331



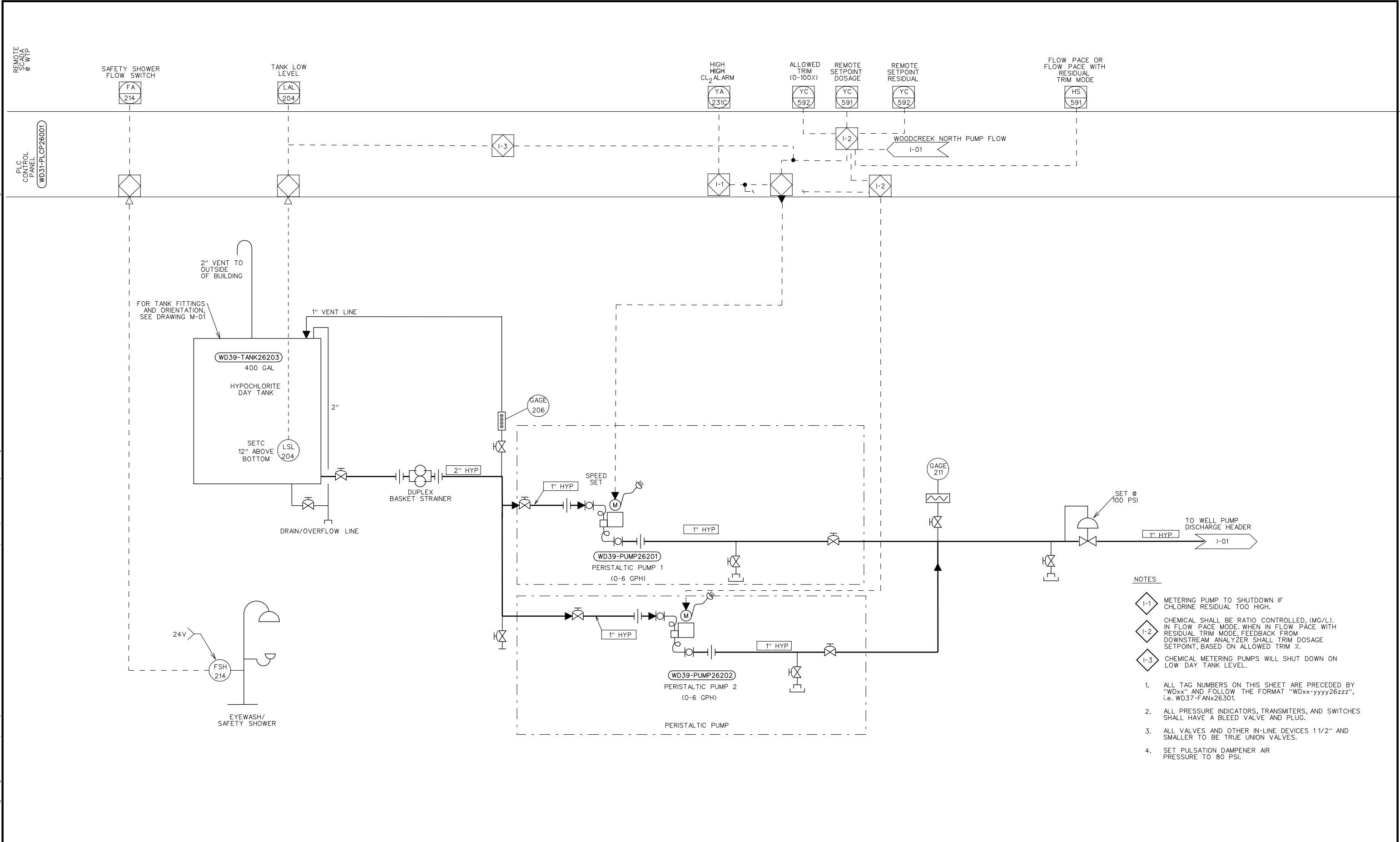
CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING
INSTRUMENTATION INSTALLATION DETAILS

GI-03
-------



				BENCH MARK	J. CALTON	 <b>MWH</b>	 <b>CITY OF ROSEVILLE</b> ENVIRONMENTAL UTILITIES DEPARTMENT  WOODCREEK NORTH PUMP STATION 8301 WOODCREEK OAKS BLVD. ROSEVILLE	CONFORMED DRAWING		I-01
				ELEVATION _____ DATUM _____	DRAWN BY: D. CRITE			INSTRUMENTATION WELL PUMP P&ID		
				DESCRIPTION _____	CHECKED BY: K. PEARSON					
				_____	SCALE: NONE					
				_____	DATE: 10/6/06					
1	REVISE ALL TAG NUMBERS (ADD. 1)	EAG	3/07	_____	PROJECT NO: 1511331					
NO.	REVISIONS	BY	DATE							



- NOTES
- I-1 METERING PUMP TO SHUTDOWN IF CHLORINE RESIDUAL TOO HIGH.
  - I-2 CHEMICAL SHALL BE RATIO CONTROLLED, (MG/L). IN FLOW PACE MODE, WHEN IN FLOW PACE WITH RESIDUAL TRIM MODE, FEEDBACK FROM DOWNSTREAM ANALYZER SHALL TRIM DOSAGE SETPOINT, BASED ON ALLOWED TRIM %.
  - I-3 CHEMICAL METERING PUMPS WILL SHUT DOWN ON LOW DAY TANK LEVEL.
  - 1. ALL TAG NUMBERS ON THIS SHEET ARE PRECEDED BY "WDxx" AND FOLLOW THE FORMAT "WDxx-yyyy26zzz", i.e. WD37-FANx26301.
  - 2. ALL PRESSURE INDICATORS, TRANSMITTERS, AND SWITCHES SHALL HAVE A BLEED VALVE AND PLUG.
  - 3. ALL VALVES AND OTHER IN-LINE DEVICES 1 1/2" AND SMALLER TO BE TRUE UNION VALVES.
  - 4. SET PULSATION DAMPENER AIR PRESSURE TO 80 PSI.

1	REVISE ALL TAG NUMBERS (ADD. 1)	EAG	3/07		
NO.	REVISIONS	BY	DATE		

BENCH MARK	
ELEVATION _____ DATUM _____	
DESCRIPTION _____	
_____	
_____	
_____	

J. CALTON
DRAWN BY: D. CRITE
CHECKED BY: K. PEARSON
SCALE: NONE
DATE: 10/6/06
PROJECT NO: 1511331

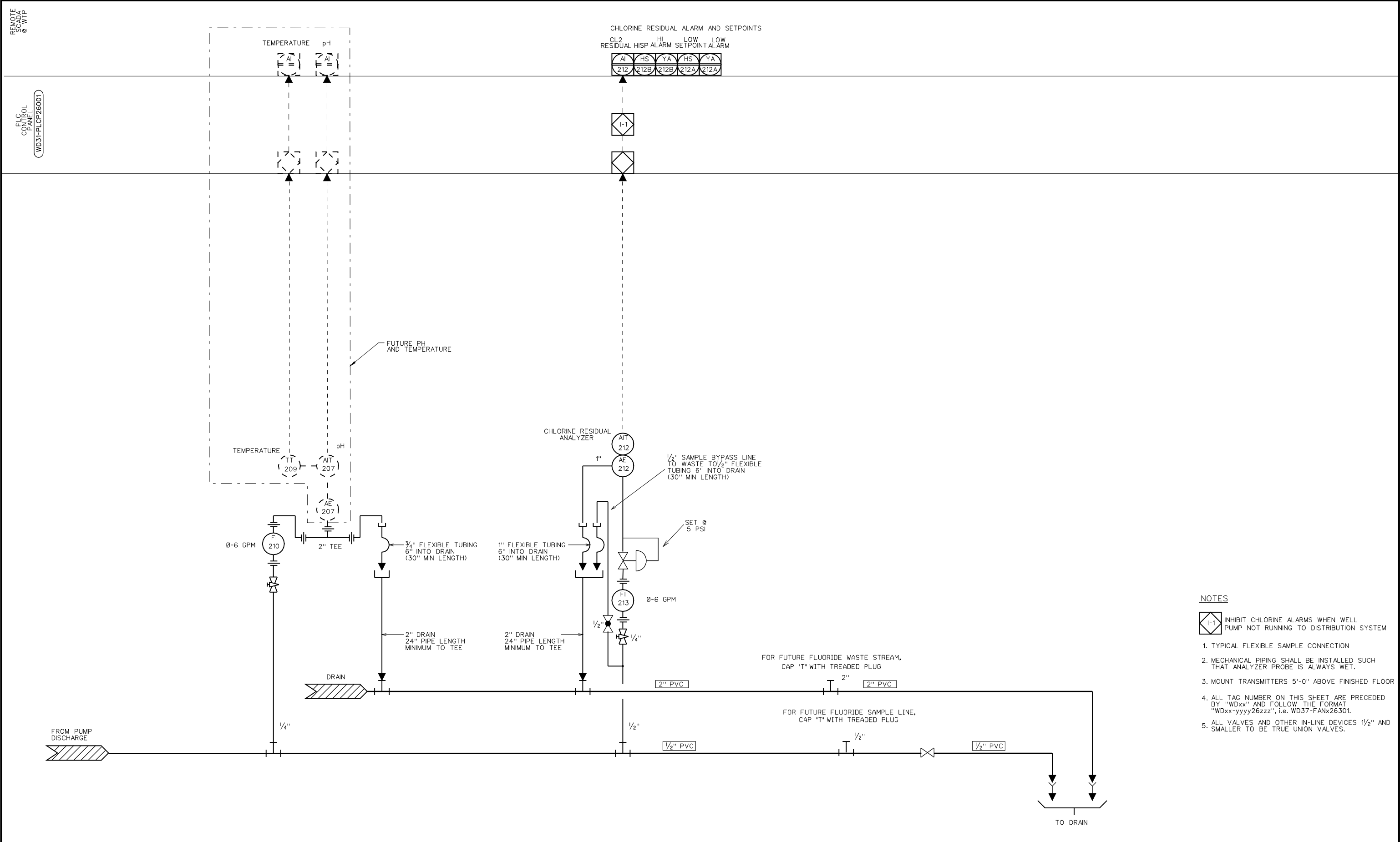


CITY OF  
**ROSEVILLE**  
TRADITION · PRIDE · PROGRESS

CITY OF ROSEVILLE  
ENVIRONMENTAL UTILITIES DEPARTMENT  
WOODCREEK NORTH PUMP STATION  
8301 WOODCREEK OAKS BLVD. ROSEVILLE

CONFORMED DRAWING	
INSTRUMENTATION HYPOCHLORITE SYSTEM P&ID	I-02

File: C:\Documents and Settings\egosse\Desktop\Project Transfer Files\Woodcreek Transfer\WDCK\_Export\Import\wcn03-j\_cnf.dgn Plot Date: 13-JUN-2007 15:26 User: egosse



--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



## Secret Ravine Fish Passage Improvement Plan 90% Submittal

# SECRET RAVINE FISH PASSAGE IMPROVEMENT PLAN 90% SUBMITTAL

## SHEET INDEX

C1	COVER SHEET
C2	SITE PLAN
C3	PROFILE AND TYPICAL SECTION
C4	EROSION CONTROL AND DIVERSION PLAN
C5	DEMOLITION PLAN
C6	SITE ACCESS PLAN
C7	DETAILS AND NOTES
R1	REVEGETATION PLAN
R2	PLANTING PALETTE AND REVEGETATION DETAILS

## PROJECT DESCRIPTION

THESE PLANS PROVIDE DETAILS FOR CONSTRUCTION OF A FISH PASSAGE IMPROVEMENT PROJECT ON SECRET RAVINE. CONSTRUCTION ACTIVITIES INCLUDE DEMOLITION OF TWO EXISTING BRIDGES, CHANNEL BANK GRADING, PLACEMENT OF LOG STRUCTURES, AND REVEGETATION WITH NATIVE RIPARIAN SPECIES.

THE OBJECTIVES OF THE PROJECT INCLUDE:

- 1) IMPROVE FISH PASSAGE WITHIN EAST CHANNEL
- 2) REMOVE FLOOD OBSTRUCTIONS (BRIDGES AND ABUTMENTS)
- 3) CREATE HIGH FLOW REFUGE IN WEST CHANNEL
- 4) REDUCE EROSION ALONG RIGHT BANK OF WEST CHANNEL TO PROTECT WALL
- 5) RESTORE GEOMORPHICALLY APPROPRIATE CHANNEL DIMENSIONS
- 6) IMPROVE HABITAT BY CREATION OF INSET FLOODPLAIN WITH NATIVE RIPARIAN REVEGETATION

## GENERAL NOTES

- 1) PREPARED AT THE REQUEST OF:  
DRY CREEK CONSERVANCY  
P.O. BOX 1311  
ROSEVILLE, CA 95747
- 2) TOPOGRAPHIC MAPPING PROVIDED BY: THE CALIFORNIA DEPARTMENT OF WATER RESOURCES. MARCH-APRIL, 2003.  
DEPARTMENT OF WATER RESOURCES  
1416 9TH STREET  
SACRAMENTO, CA 95814  
TELEPHONE: (916) 653-5791
- 3) APN: 015-450-022
- 4) PROJECT BENCHMARK: POINT #11, FOUND PK NAIL IN EASTERN BRIDGE DECK, ELEVATION 169.97'.
- 5) HORIZONTAL DATUM: NAD 83, ZONE 2.
- 6) ELEVATIONS AND DISTANCES SHOWN ARE IN FEET AND DECIMALS THEREOF. CONTOUR INTERVAL IS ONE FOOT.
- 7) THIS IS NOT A BOUNDARY SURVEY. PROPERTY LINES SHOWN HEREON WERE COMPILED FROM RECORD INFORMATION AND FROM FIELD TIES TO EXISTING BOUNDARY MONUMENTATION. THE LOCATION OF THESE LINES IS SUBJECT TO CHANGE, PENDING THE RESULTS OF A COMPLETE BOUNDARY SURVEY.
- 8) ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE CURRENT EDITION OF THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS FOR CONSTRUCTION OF LOCAL STREETS AND ROADS (HEREAFTER REFERRED TO AS "STANDARD SPECIFICATIONS".
- 9) THE ENGINEER SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. A QUALIFIED CIVIL ENGINEER WITH EXPERIENCE IN THE INSTALLATION OF FEATURES OF THE TYPE SHOWN ON THESE PLANS, SHALL PROVIDE SURVEILLANCE AND GUIDANCE DURING THE CONSTRUCTION PROCESS, AS NECESSARY TO ENSURE PROPER INSTALLATION PROCEDURES.
- 10) EXISTING UNDERGROUND UTILITY LOCATIONS:

LOCATIONS SHOWN ARE COMPILED FROM INFORMATION SUPPLIED BY THE APPROPRIATE UTILITY AGENCIES AND FROM FIELD MEASUREMENTS TO ABOVE GROUND FEATURES READILY VISIBLE AT THE TIME OF SURVEY. LOCATIONS SHOWN ARE APPROXIMATE. THE CONTRACTOR IS CAUTIONED THAT ONLY ACTUAL EXCAVATION WILL REVEAL THE DIMENSIONS, SIZES, MATERIALS, LOCATIONS, AND DEPTH OF UNDERGROUND UTILITIES.

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE LOCATION AND/OR PROTECTION OF ALL EXISTING AND PROPOSED PIPING, UTILITIES, TRAFFIC SIGNAL EQUIPMENT (BOTH ABOVE GROUND AND BELOW GROUND), STRUCTURES, AND ALL OTHER EXISTING IMPROVEMENTS THROUGHOUT CONSTRUCTION.

PRIOR TO COMMENCING FABRICATION OR CONSTRUCTION, CONTRACTOR SHALL DISCOVER OR VERIFY THE ACTUAL DIMENSIONS, SIZES, MATERIALS, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES AND POTHOLE THOSE AREAS WHERE POTENTIAL CONFLICTS ARE LIKELY OR DATA IS OTHERWISE INCOMPLETE.

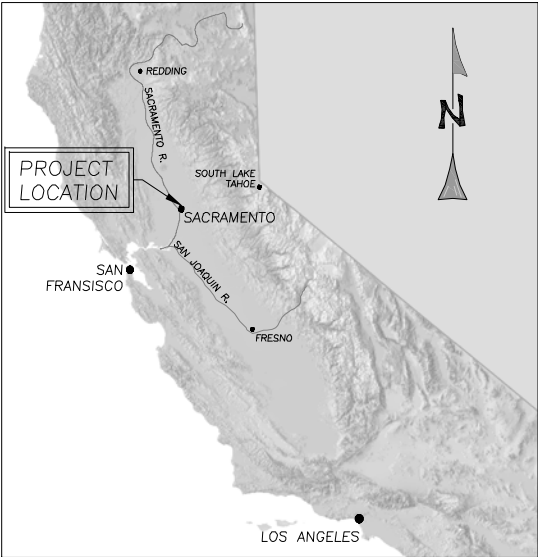
CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO PROTECT EXISTING UTILITIES DURING CONSTRUCTION OPERATIONS, AND SHALL BE SOLELY RESPONSIBLE FOR THE COST OF REPAIR/REPLACEMENT OF ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION. CONTRACTOR TO CALL UNDERGROUND SERVICE ALERT (1-800-642-2444) TO LOCATE ALL UNDERGROUND UTILITY LINES PRIOR TO COMMENCING CONSTRUCTION.

UPON LEARNING OF THE EXISTENCE AND/OR LOCATIONS OF ANY UNDERGROUND FACILITIES NOT SHOWN OR SHOWN INACCURATELY ON THE PLANS OR NOT PROPERLY MARKED BY THE UTILITY OWNER, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITY OWNER AND THE CITY BY TELEPHONE AND IN WRITING.

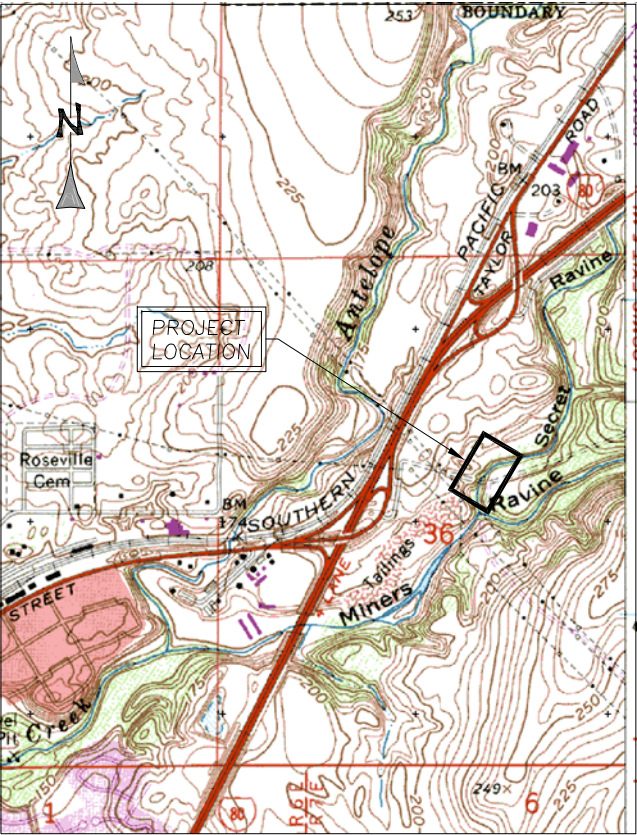
UTILITY RELOCATIONS REQUIRED FOR THE CONSTRUCTION OF THE PROJECT FACILITIES WILL BE PERFORMED BY THE UTILITY COMPANY, UNLESS OTHERWISE NOTED.

PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL CONTACT ALL UTILITIES COMPANIES WITH REGARD TO WORKING OVER, UNDER, OR AROUND EXISTING FACILITIES AND TO OBTAIN INFORMATION REGARDING RESTRICTIONS THAT ARE REQUIRED TO PREVENT DAMAGE TO THE FACILITIES.

- 11) SHOULD THE CONTRACTOR DISCOVER ANY DISCREPANCIES BETWEEN THE CONDITIONS EXISTING IN THE FIELD AND THE INFORMATION SHOWN ON THESE DRAWINGS, HE SHALL NOTIFY THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.



STATE MAP  
N.T.S.



VICINITY MAP  
N.T.S.

## GENERAL NOTES (CONTINUED)

12) PROJECT SCHEDULE:

PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL PROVIDE ENGINEER A DETAILED CONSTRUCTION SCHEDULE FOR APPROVAL.

THE CONTRACTOR SHALL NOT BEGIN ANY CONSTRUCTION WORK UNTIL THE PROJECT SCHEDULE AND WORK PLAN IS APPROVED BY THE ENGINEER.

THE CONTRACTOR SHALL PURSUE WORK IN A CONTINUOUS AND DILIGENT MANNER TO ENSURE A TIMELY COMPLETION OF THE PROJECT.

ALL CONSTRUCTION SHALL BE CLOSELY COORDINATED WITH THE ENGINEER SO THAT THE QUALITY OF WORK CAN BE CHECKED FOR APPROVAL.

13) THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN, PERMITTING, INSTALLATION, AND MAINTENANCE OF ANY AND ALL TRAFFIC CONTROL MEASURES DEEMED NECESSARY.

14) THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE GENERAL SAFETY DURING CONSTRUCTION. ALL WORK SHALL CONFORM TO PERTINENT SAFETY REGULATIONS AND CODES. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR FURNISHING, INSTALLING, AND MAINTAINING ALL WARNING SIGNS AND DEVICES NECESSARY TO SAFEGUARD THE GENERAL PUBLIC AND THE WORK, AND PROVIDE FOR THE PROPER AND SAFE ROUTING OF VEHICULAR AND PEDESTRIAN TRAFFIC DURING THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE PROVISIONS OF OSHA IN THE CONSTRUCTION PRACTICES FOR ALL EMPLOYEES DIRECTLY ENGAGED IN THE CONSTRUCTION OF THIS PROJECT.

15) CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTION LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL. NEITHER THE PROFESSIONAL ACTIVITIES OF CONSULTANT NOR THE PRESENCE OF CONSULTANT OR HIS OR HER EMPLOYEES OR SUB-CONSULTANTS AT A CONSTRUCTION SITE SHALL RELIEVE THE CONTRACTOR AND ITS SUBCONTRACTORS OF THEIR RESPONSIBILITIES INCLUDING, NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND APPLICABLE HEALTH OR SAFETY REQUIREMENTS OF ANY REGULATORY AGENCY OR OF STATE LAW.

16) THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SITE IN A NEAT AND ORDERLY MANNER THROUGHOUT THE CONSTRUCTION PROCESS. ALL MATERIALS SHALL BE STORED WITHIN APPROVED CONSTRUCTION AREAS.

17) THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AT HIS EXPENSE, ALL PERMITS AS REQUIRED BY THE LOCAL AGENCIES, INCLUDING BUT NOT LIMITED TO; ENCROACHMENT, GRADING AND LANE CLOSURES NOT PREVIOUSLY OBTAINED BY THE OWNER. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR AND EQUIPMENT REQUIRED TO COMPLY WITH ALL APPLICABLE PERMIT CONDITIONS AND REQUIREMENTS.

18) CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING AND LAYOUT, UNLESS OTHERWISE SPECIFIED.

19) TREE DIMENSIONS: TRUNK DIAMETERS SHOWN REPRESENT DIAMETER AT BREAST HEIGHT (DBH), MEASURED IN INCHES. DBH IS MEASURED 4.5 FT ABOVE GROUND FOR SINGLE TRUNKS AND TRUNKS THAT SPLIT INTO SEVERAL STEMS CLOSE TO THE GROUND. THE DBH FOR TREES THAT SPLIT INTO SEVERAL STEMS CLOSE TO THE GROUND MAY BE CONSOLIDATED INTO A SINGLE DBH BY TAKING THE SQUARE ROOT OF THE SUM OF ALL SQUARED STEM DBH'S, UNLESS OTHERWISE NOTED. WHERE TREES FORK NEAR BREAST HEIGHT, TRUNK DIAMETER IS MEASURED AT THE NARROWEST PART OF THE MAIN STEM BELOW THE FORK. FOR TREES ON A SLOPE, BREAST HEIGHT IS REFERENCED FROM THE UPPER SIDE OF THE SLOPE. FOR LEANING TREES, BREAST HEIGHT IS MEASURED ON THE SIDE THAT THE TREE LEANS TOWARD. TREES WITH DBH LESS THAN 8" ARE TYPICALLY NOT SHOWN.

12"P = 12" DBH PINE

20) TREE SPECIES ARE IDENTIFIED WHEN KNOWN. HOWEVER, FINAL DETERMINATION SHOULD BE MADE BY A QUALIFIED BOTANIST. REFER TO THE LEGEND FOR TREE SPECIES SYMBOLS.

21) TREE TRUNK DIMENSIONS MAY BE SHOWN OUT-OF-SCALE FOR PLOTTING CLARITY. CAUTION SHOULD BE USED IN DESIGNING NEAR TREE TRUNKS. THERE ARE LIMITATIONS ON FIELD ACCURACY, DRAFTING ACCURACY, MEDIUM STRETCH AS WELL AS THE "SPREAD" OR "LEANING" OF TREES. REQUEST ADDITIONAL TOPOGRAPHIC DETAIL WHERE CLOSE TOLERANCES ARE ANTICIPATED. INDIVIDUAL TREES ARE NOT TYPICALLY LOCATED WITHIN DRIPLINE CANOPY AREAS SHOWN.

22) WILLOWS TO BE REMOVED SHALL BE TRIMMED, TRANSPLANTED, AND UTILIZED IN THE REVEGETATION PLAN, WHERE FEASIBLE.

## ABBREVIATIONS

A	ALDER	N.T.S.	NOT TO SCALE
AC	ASPHALT CONCRETE	O.C.	ON CENTER
CY	CUBIC YARDS	R.C.	RELATIVE COMPACTION
E	EXISTING	RSP	ROCK SLOPE PROTECTION
EG	EXISTING GROUND	SPK	SPIKE
EL	ELEVATION	SQ.FT.	SQUARE FOOT
DI	DRAINAGE INLET	T	TREE
FG	FINISHED GRADE	T.B.D.	TO BE DETERMINED
FT	FEET	TYP.	TYPICAL
INV	INVERT	UNK	UNKNOWN
N	NEW	UNO	UNLESS NOTED OTHERWISE

## SECTION AND DETAIL CONVENTION

SECTION OR DETAIL IDENTIFICATION  
(NUMBER OR LETTER)



REFERENCE SHEET FROM WHICH  
DETAIL OR SECTION IS TAKEN.

REFERENCE SHEET ON WHICH  
SECTION OR DETAIL IS SHOWN.

SH+G  
ENGINEERING

500 SEABRIGHT AVE., SUITE 202  
SANTA CRUZ, CA 95062  
(831) 427-0288

A Division of Swanson Hydrology • Geomorphology

DRAFT

NOT FOR CONSTRUCTION

PREPARED AT THE REQUEST OF:

DRY CREEK CONSERVANCY

P.O. BOX 1311

ROSEVILLE, CA 95747

COVER SHEET

SECRET RAVINE  
FISH PASSAGE  
IMPROVEMENT PLAN  
90% SUBMITTAL

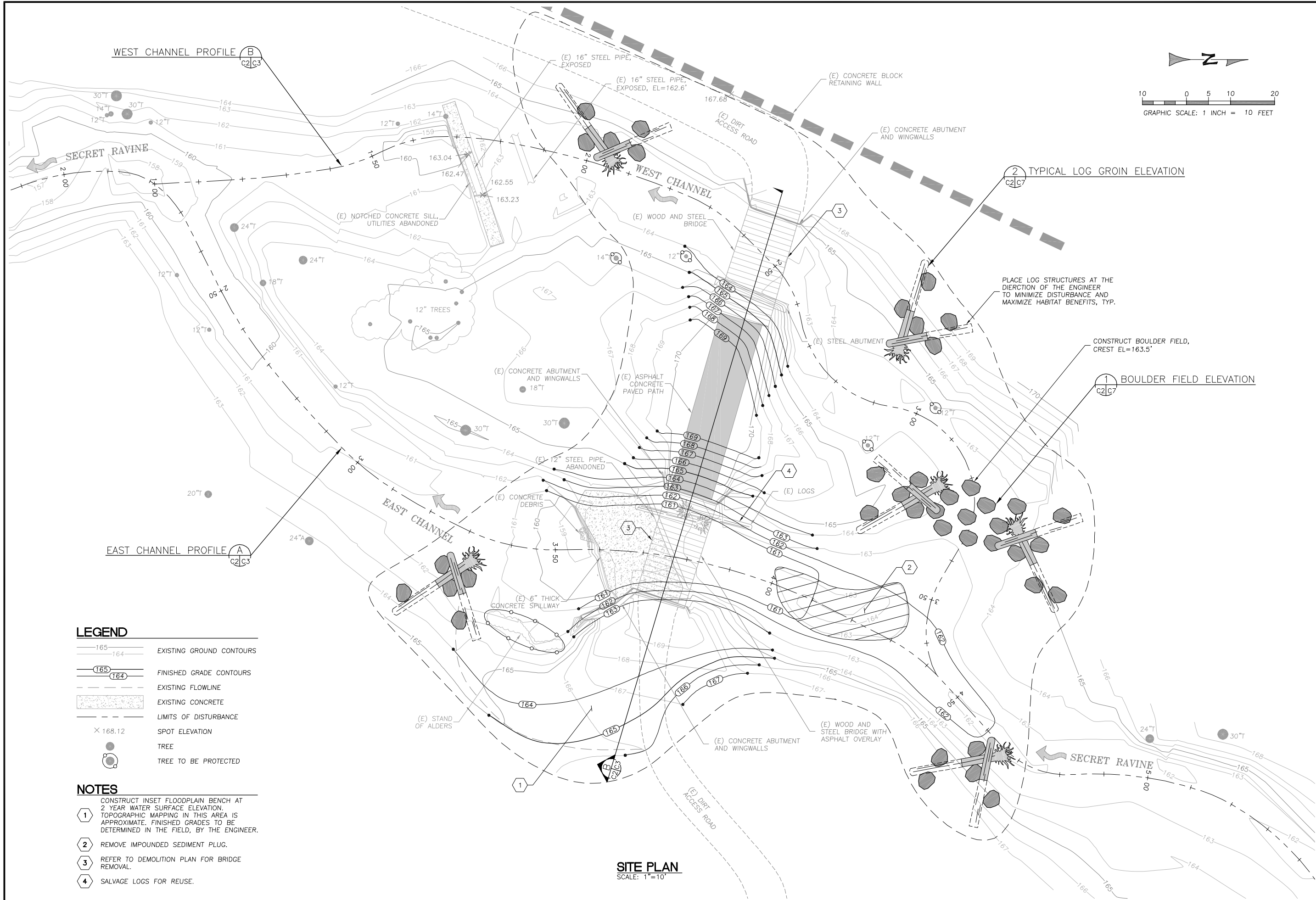
DESIGNED BY: M.W.W.  
DRAWN BY: C.M.R.  
CHECKED BY: M.W.W.  
DATE: 10/06/08  
JOB NO.: 08-729

BAR IS ONE INCH ON  
ORIGINAL DRAWING,  
ADJUST SCALES FOR  
REDUCED PLOTS  
0" 1"

C1

1  
OF  
9





DRAFT  
NOT FOR CONSTRUCTION

PREPARED AT THE REQUEST OF:  
DRY CREEK CONSERVANCY  
P.O. BOX 1311  
ROSEVILLE, CA 95747

PROFILE  
AND  
TYPICAL  
SECTION

SECRET RAVINE  
FISH PASSAGE  
IMPROVEMENT PLAN  
90% SUBMITTAL

DESIGNED BY: M.W.W.  
DRAWN BY: C.M.R.  
CHECKED BY: M.W.W.  
DATE: 10/06/08  
JOB NO.: 08-729

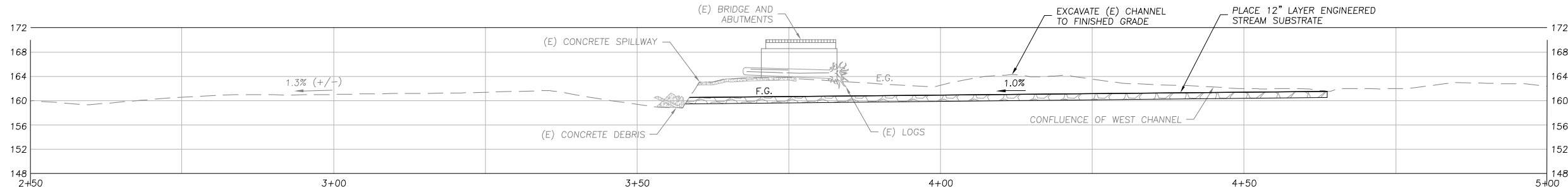
BAR IS ONE INCH ON  
ORIGINAL DRAWING,  
ADJUST SCALES FOR  
REDUCED PLOTS

0 1"

C3

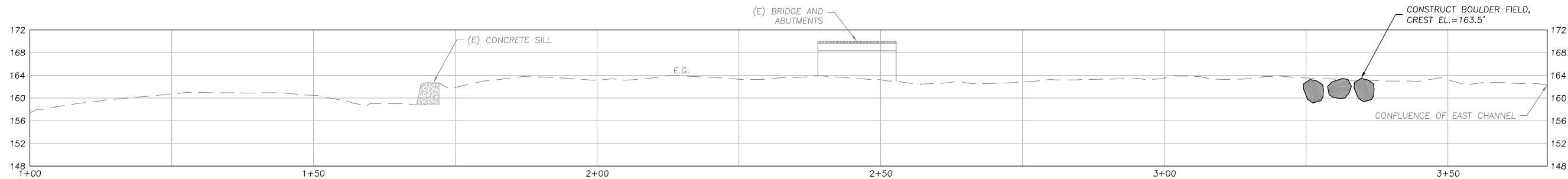
3  
OF  
9

R:\LAND PROJECTS\99-131\_SECRET-RAVINE-FISHPASSAGE\dwg\FISH-PASSAGE-90%.DWG 12/23/2008 10:27:33 AM PST



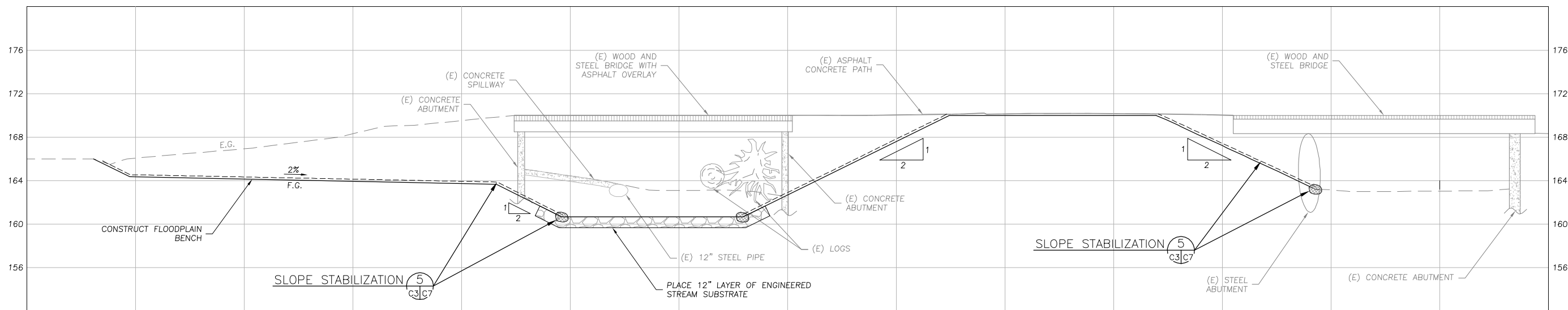
EAST CHANNEL PROFILE  
SCALE: 1"=10'

A  
C2/C3



WEST CHANNEL PROFILE  
SCALE: 1"=10'

B  
C2/C3



TYPICAL SECTION  
SCALE: 1"=5'

B  
C2/C3

## DIVERSION/DEWATERING NOTES

1. THE DIVERSION PLAN AS SHOWN IS SCHEMATIC ONLY. SUBMIT A SITE DIVERSION/DEWATERING PLAN FOR APPROVAL BY THE ENGINEER. THE BASIC REQUIREMENTS OF THE PLAN ARE SPECIFIED IN THE SPECIAL PROVISIONS.
2. DIVERSION/DEWATERING PIPES MAY BE RELOCATED DURING CONSTRUCTION, AS NECESSARY TO PERFORM SITE GRADING AND CHANNEL CONSTRUCTION.

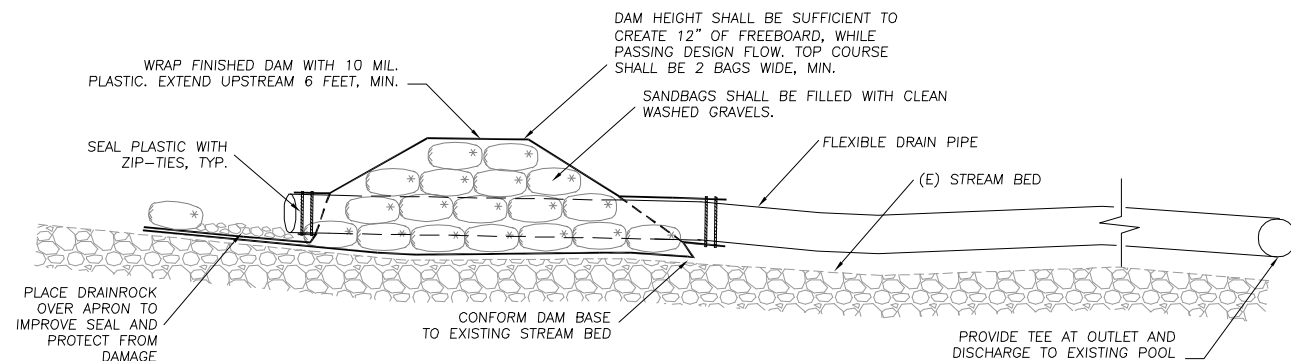
## CONSTRUCTION PHASING NOTES

SUBMIT A CONSTRUCTION PHASING PLAN PRIOR TO CONSTRUCTION. CONSTRUCTION PHASING SHALL BE GENERALLY ACCOMPLISHED AS FOLLOWS:

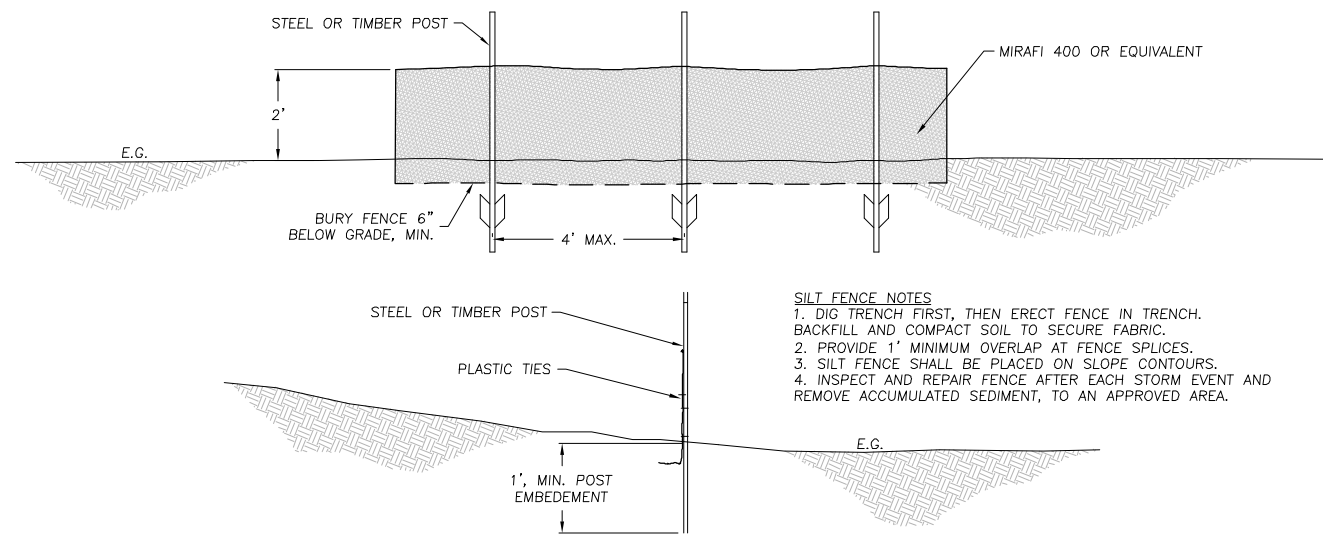
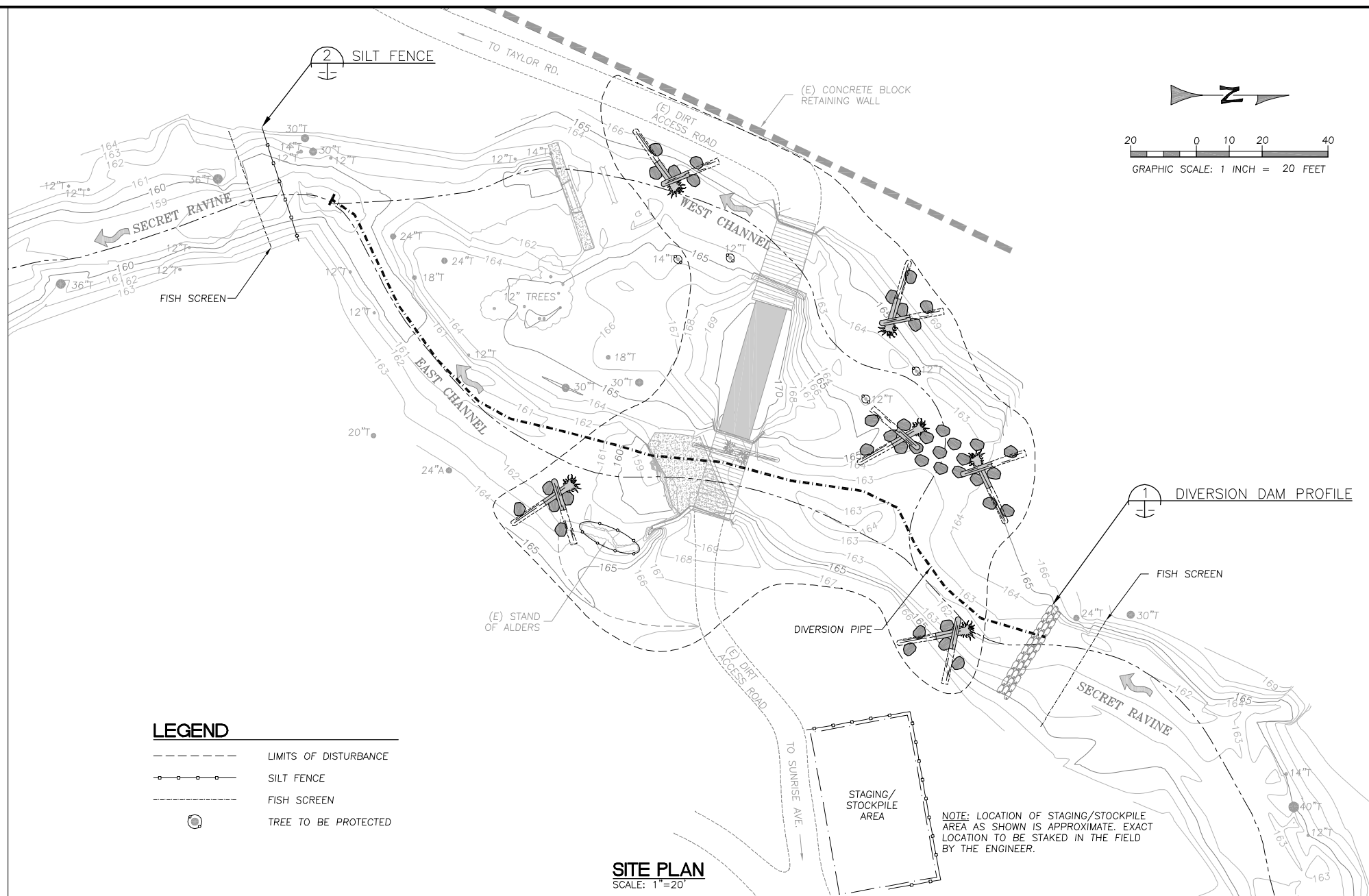
- ① CONTACT UNDERGROUND SERVICE ALERT (USA) TO LOCATE ALL UNDERGROUND UTILITIES.
- ② ESTABLISH AN EQUIPMENT STAGING AREA AND ROCKED ENTRANCES AT LOCATIONS TO BE APPROVED BY THE ENGINEER. TAKE MEASURES TO ENSURE PEDESTRIAN AND VEHICULAR TRAFFIC SAFETY, PROTECTION OF EXISTING INFRASTRUCTURE, AND ADJACENT LANDSCAPING. THIS PROTECTION SHALL, AT A MINIMUM, CONSIST OF INSTALLATION OF ESA FENCING WHERE SHOWN.
- ③ INSTALL SILT FENCES.
- ④ RELOCATE FISH AND INSTALL BLOCKNETS.
- ⑤ INSTALL DIVERSION DAM.
- ⑥ INSTALL TEMPORARY DIVERSION, DEWATERING, EROSION, AND DUST CONTROL MEASURES.
- ⑦ PERFORM DEMOLITION, AND CLEARING AND GRUBBING.
- ⑧ PERFORM GRADING.
- ⑨ INSTALL LOG STRUCTURES.
- ⑩ INSTALL PERMANENT EROSION CONTROL AND REVEGETATION.
- ⑪ REMOVE TEMPORARY DIVERSION, DEWATERING, EROSION AND SEDIMENT CONTROL FEATURES.
- ⑫ REMOVE FISH BLOCKNETS.
- ⑬ DEMOBILIZE.

### EROSION CONTROL NOTES

1. DURING CONSTRUCTION ~~DIRECT~~ ALL RUNOFF TO NON-ERODIBLE LOCATIONS.
2. A STANDBY CREW FOR EMERGENCY WORK SHALL BE AVAILABLE AT ALL TIMES DURING THE RAINY SEASON (OCTOBER 15 THROUGH APRIL 15). NECESSARY MATERIALS SHALL BE AVAILABLE AND STOCKPILED AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY DEVICES WHEN RAIN IS IMMINENT.
3. CONSTRUCT TEMPORARY EROSION CONTROL MEASURES AS SHOWN ON THIS PLAN AND/OR AS DIRECTED BY THE ENGINEER TO CONTROL DRAINAGE WHICH HAS BEEN AFFECTED BY GRADING AND/OR TRENCHING OPERATIONS.
4. AFTER A RAINSTORM, ALL SILT AND DEBRIS SHALL BE REMOVED FROM CHECK BERMS AND SEDIMENTATION BASIN AND THE BASIN PUMPED DRY.
5. THE ENGINEER OF RECORD, OR HIS AUTHORIZED REPRESENTATIVE MAY REQUIRE THE CONTRACTOR AT ANY TIME TO INSTALL AND/OR CONSTRUCT ADDITIONAL DRAINAGE STRUCTURES AS NECESSARY TO PREVENT OR CONTROL EROSION.
6. THE EROSION CONTROL DEVICES ON THIS PLAN ARE A GENERAL CONCEPT OF WHAT MAY BE REQUIRED. EROSION CONTROL DEVICES MAY BE RELOCATED, DELETED OR ADDITIONAL ITEMS MAY BE REQUIRED DURING THE ACTUAL SOIL CONDITIONS ENCOUNTERED, AT THE DISCRETION OF THE ENGINEER.
7. THE CONTRACTOR IS RESPONSIBLE TO KEEP IN FORCE ALL EROSION CONTROL DEVICES AND TO MODIFY THOSE DEVICES AS SITE PROGRESS DICTATES.
8. NO CUT OR FILL SLOPES SHALL BE STEEPER THAN 2' HORIZONTAL TO 1' VERTICAL.
9. ALL DISTURBED AREAS ARE TO BE MULCHED AND SEEDED WITH NATIVE GRASSES AND HERBS, PER RECOMMENDATIONS OF THE REVEGETATION PLAN.
10. BETWEEN OCTOBER 15 AND APRIL 15, EXPOSED SOIL SHALL BE PROTECTED FROM EROSION AT ALL TIMES. DURING CONSTRUCTION, SUCH PROTECTION MAY CONSIST OF MULCHING AND/OR PLANTING OF NATIVE VEGETATION OF ADEQUATE DENSITY. BEFORE COMPLETION OF THE PROJECT, ANY EXPOSED SOIL ON DISTURBED SLOPES SHALL BE PERMANENTLY PROTECTED FROM EROSION.



## DIVERSION DAM PROFILE



**SILT FENCE**  
SCALE: 1"=2'



DEMOLITION NOTES

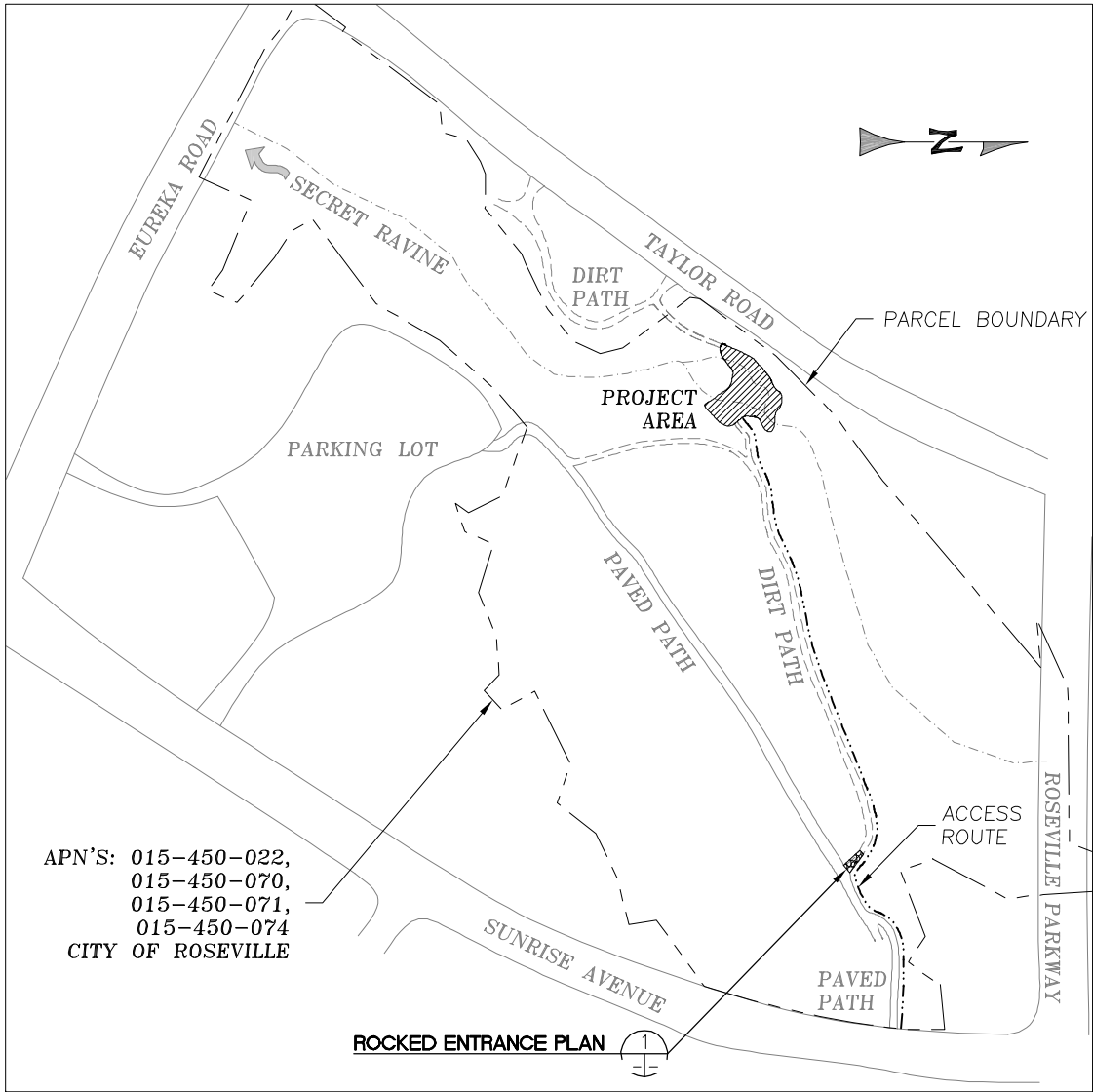
1. THE REMOVAL OF EXISTING IMPROVEMENTS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 15 OF THE STANDARD SPECIFICATIONS.
2. EXISTING IMPROVEMENTS, ADJACENT PROPERTY, TREES AND PLANTS, UTILITIES AND OTHER FACILITIES THAT ARE NOT REMOVED SHALL BE PROTECTED FROM INJURY OR DAMAGE RESULTING FROM THE CONTRACTOR'S OPERATIONS IN ACCORDANCE WITH SECTION 7.1 OF THE STANDARD SPECIFICATIONS.
3. WHERE ITEMS TO BE DEMOLISHED EXTEND BELOW FINISHED GRADE, THEY SHALL BE REMOVED TO A MINIMUM OF 18" BELOW FINISHED GRADE.



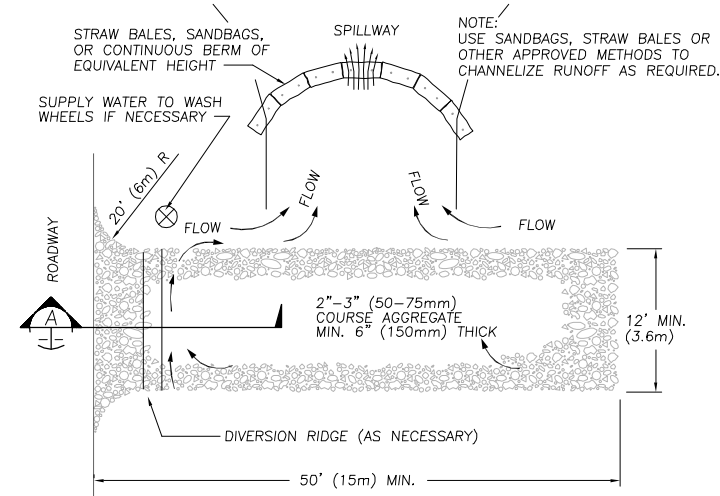
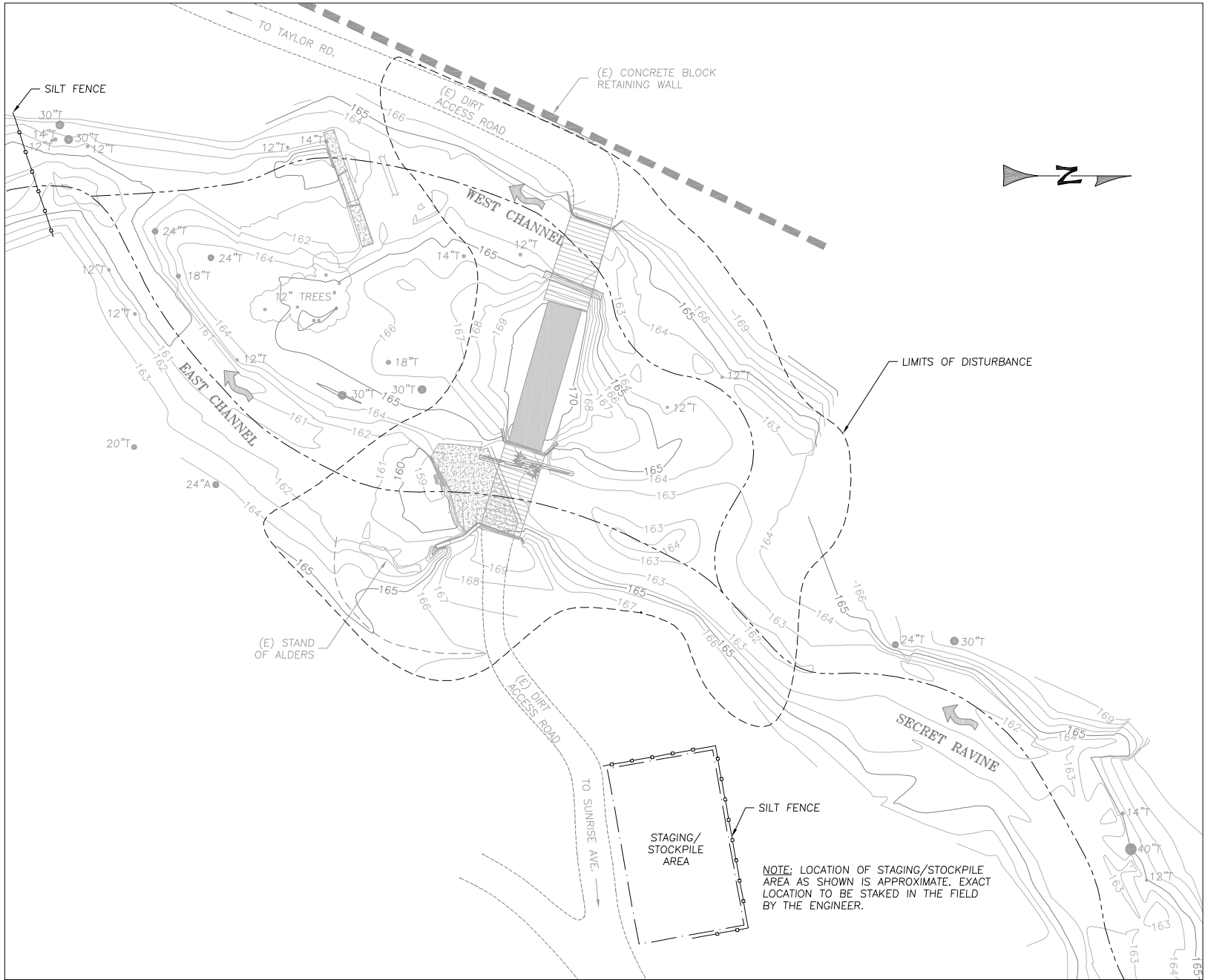
DEMOLITION PLAN  
SCALE: 1"=10'

SITE ACCESS NOTES

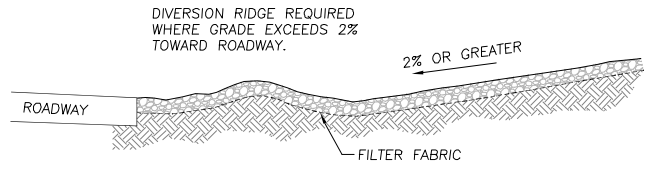
1. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A DETAILED CONSTRUCTION SCHEDULE, INCLUDING DETAILS OF SITE B.M.P. AND DIVERSION INSTALLATION AND INTENDED WORKING HOURS.
2. UTILIZE ONLY THE APPROVED ACCESS ROAD, AS SHOWN ON THE DRAWINGS. MATERIALS SHALL BE STOCKPILED WITHIN AN EXISTING FLAT AND PREVIOUSLY DISTURBED AREA.
3. STOCKPILE AREA AS SHOWN IS APPROXIMATE. SILT FENCING SHALL BE INSTALLED ON THE DOWN SLOPE SIDE OF THE STOCKPILE AREA.
4. MAINTAIN CONTINUOUS DUST CONTROL PRACTICES, THROUGHOUT CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR DAILY CLEANING OF ALL MUD, DIRT, DEBRIS, ETC., FROM ANY AND ALL ADJACENT ROADS.
5. ROCKED ENTRANCES SHALL BE PLACED AT ALL POINTS WHERE HAUL ROADS MEET A PUBLIC RIGHT-OF-WAY TO PREVENT TRACKING OR FLOWING OF SEDIMENT. ENTRANCES SHALL BE MAINTAINED AS NECESSARY, OR AS DIRECTED BY THE ENGINEER.
6. TREE PROTECTION SHALL CONSIST OF TEMPORARY FENCING INSTALLED AS SHOWN. FENCE SHALL BE 4' TALL, MIN. NO FENCING SHALL BE NAILED TO TREES.

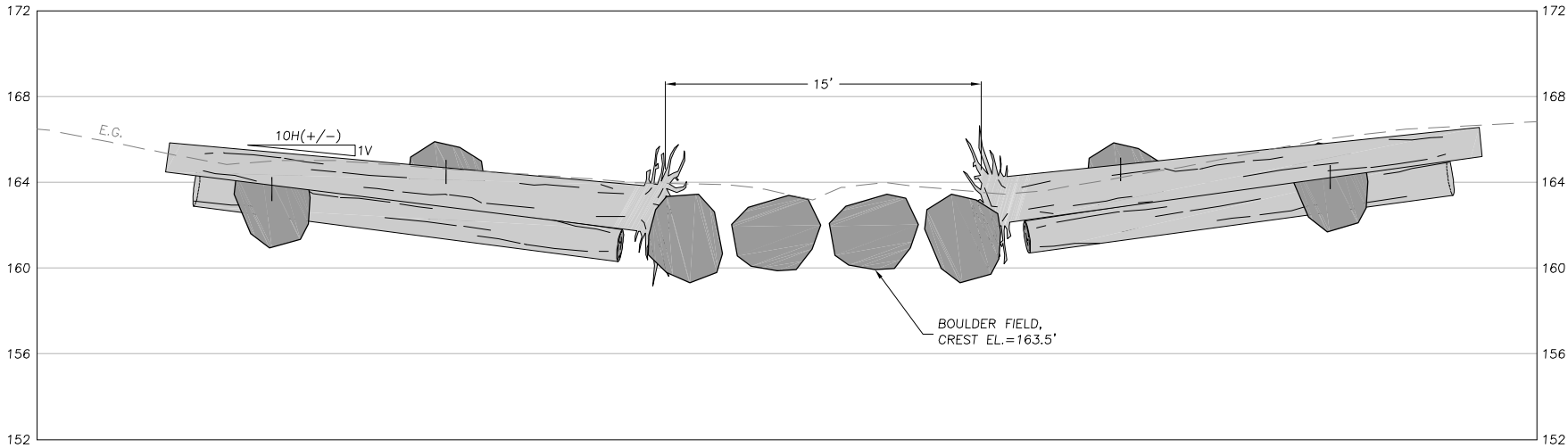


SITE ACCESS OVERVIEW  
SCALE: 1"=200'

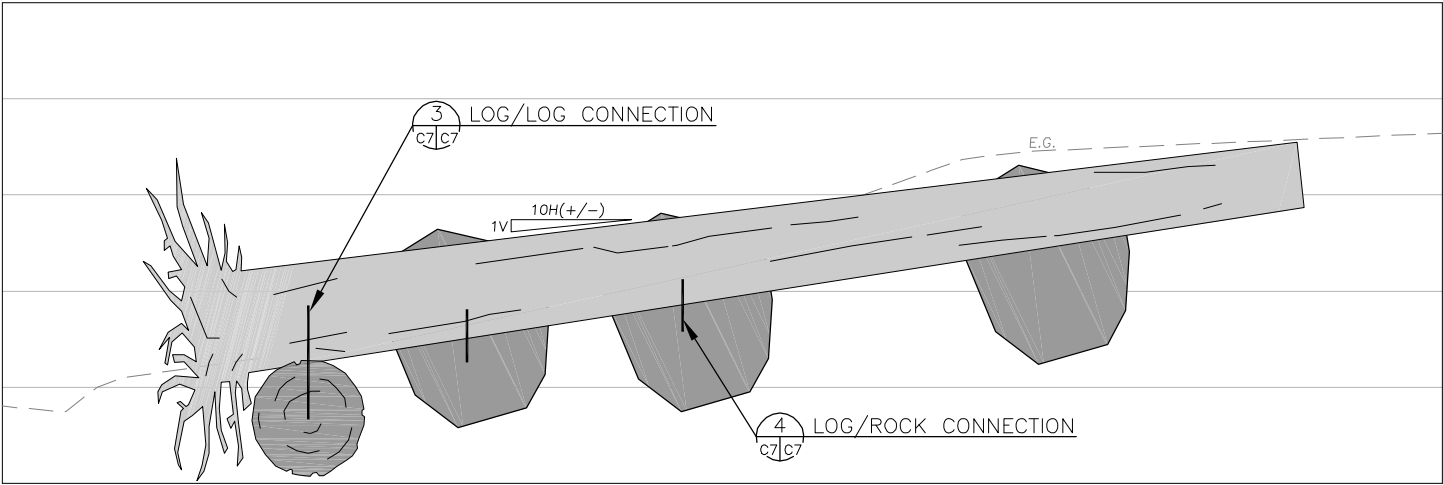


- ROCKED ENTRANCE NOTES
1. THE ENTRANCE SHALL BE MAINTAINED TO PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
  2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
  3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

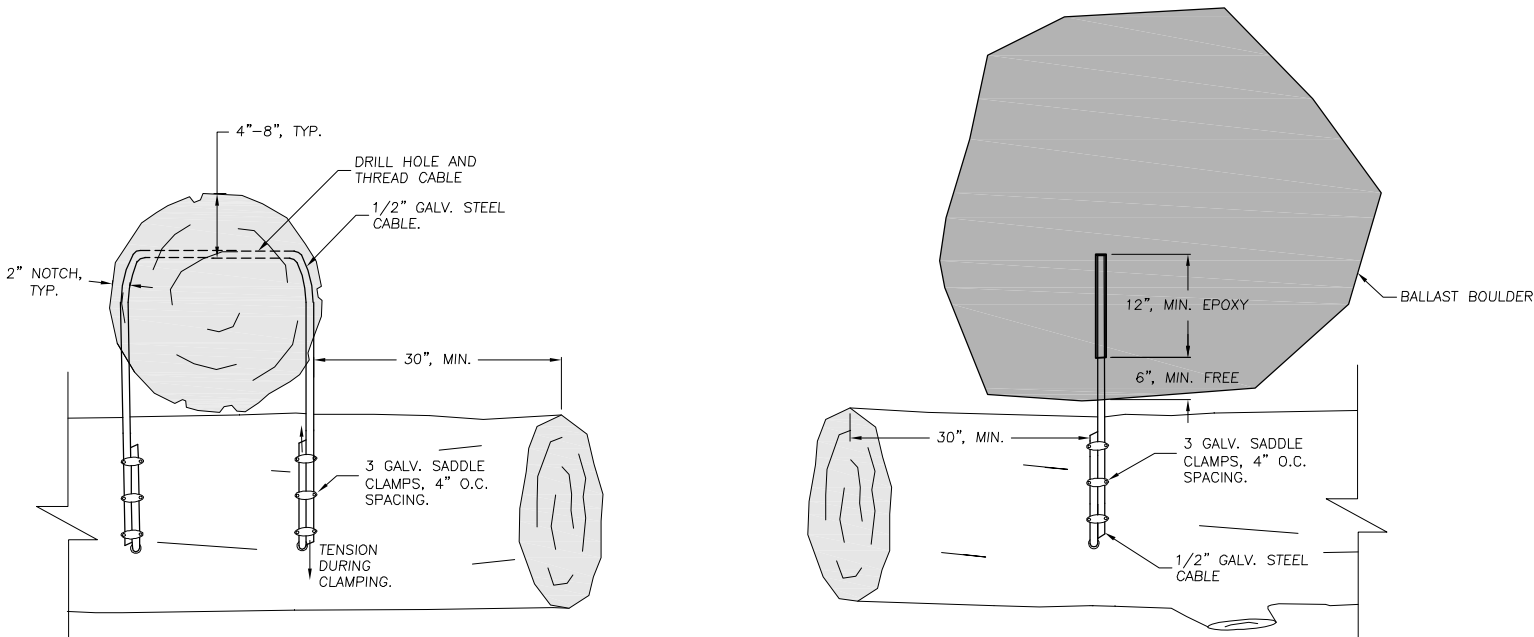




BOULDER FIELD ELEVATION 1  
SCALE: 1"=4' C2/C7

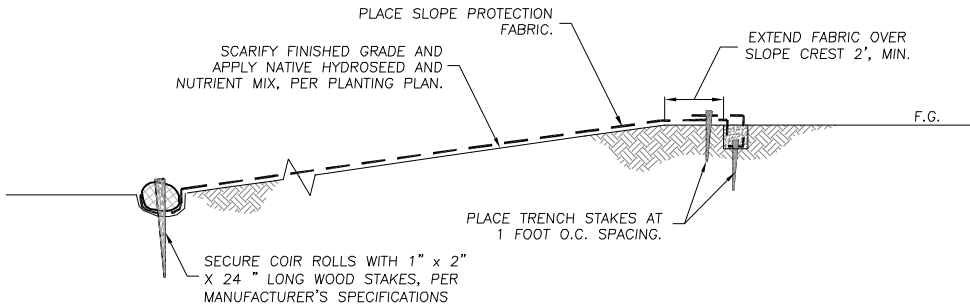


LOG GROIN ELEVATION 2  
SCALE: 1"=2' C2/C7



LOG/LOG CONNECTION 3  
SCALE: 1"=1' C7/C7

LOG/BOULDER CONNECTION 4  
SCALE: 1"=1' C7/C7



SLOPE STABILIZATION 5  
N.T.S. C3/C7

## EARTHWORK/GRADING NOTES

- 1) GRADING SUMMARY:  
TOTAL CUT VOLUME = 310 CY  
TOTAL FILL VOLUME = 0 CY  
OFFHAUL = 310 CY

THE ABOVE QUANTITIES ARE APPROXIMATE IN-PLACE VOLUMES CALCULATED AS THE DIFFERENCE BETWEEN EXISTING GROUND AND THE PROPOSED FINISH GRADE. EXISTING GROUND IS DEFINED BY THE TOPOGRAPHIC CONTOURS AND/OR SPOT ELEVATIONS ON THE PLAN. PROPOSED FINISH GRADE IS DEFINED AS THE DESIGN SURFACE ELEVATION OF EARTH TO BE CONSTRUCTED.

THE ABOVE QUANTITIES HAVE BEEN CALCULATED FOR BUILDING PERMIT PURPOSES ONLY AND HAVE NOT BEEN FACTORED TO INCLUDE ALLOWANCES FOR BULKING, CLEARING AND GRUBBING, SUBSIDENCE, SHRINKAGE, OVER EXCAVATION, AND RECOMPACTION, UNDERGROUND UTILITY AND SUBSTRUCTURE SPOILS AND CONSTRUCTION METHODS.

THE CONTRACTOR SHALL PERFORM AN INDEPENDENT EARTHWORK ESTIMATE FOR THE PURPOSE OF PREPARING BID PRICES FOR EARTHWORK. THE BID PRICE SHALL INCLUDE COSTS FOR ANY NECESSARY IMPORT AND PLACEMENT OF EARTH MATERIALS OR THE EXPORT AND PROPER DISPOSAL OF EXCESS EARTH MATERIALS.

2) PRIOR TO COMMENCING WORK, ALL AREAS TO REMAIN UNDISTURBED SHALL BE ADEQUATELY PROTECTED WITH TEMPORARY FENCING.

3) ALL EXCESS SOILS SHALL BE REMOVED TO AN APPROVED DUMP SITE OR DISPOSED OF ON SITE AT A LOCATION TO BE APPROVED BY THE ENGINEER, IN A MANNER THAT WILL NOT CAUSE EROSION,

4) CLEARING AND GRUBBING, SUBGRADE PREPARATION AND EARTHWORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 19 OF THE STANDARD SPECIFICATIONS, THESE DRAWINGS, AND THE SPECIAL PROVISIONS.

5) UNSUITABLE SOIL OR MATERIALS, NOT TO BE INCLUDED IN THE WORK INCLUDE:

- A. ORGANIC MATERIALS SUCH AS PEAT, MULCH, ORGANIC SILT OR SOD.  
B. SOILS CONTAINING EXPANSIVE CLAYS.  
C. MATERIAL CONTAINING EXCESSIVE MOISTURE.  
D. POORLY GRADED COURSE MATERIAL, PARTICLE SIZE IN EXCESS OF 6 INCHES.  
E. MATERIAL WHICH WILL NOT ACHIEVE SPECIFIED DENSITY OR BEARING.

6) FINE GRADING ELEVATIONS AND SLOPES NOT SHOWN SHALL BE DETERMINED BY THE CONTRACTOR IN THE FIELD TO OBTAIN DRAINAGE IN THE DIRECTION INDICATED. ALL FINAL GRADING SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.

7) THE TOP 6" OF SUBGRADE UNDER ALL PAVED SURFACES SUBJECT TO VEHICULAR USE SHALL BE COMPACTED TO A MINIMUM OF 95% RELATIVE COMPACTION, IN ACCORDANCE WITH ASTM-D1557 STANDARD.

## LOG NOTES

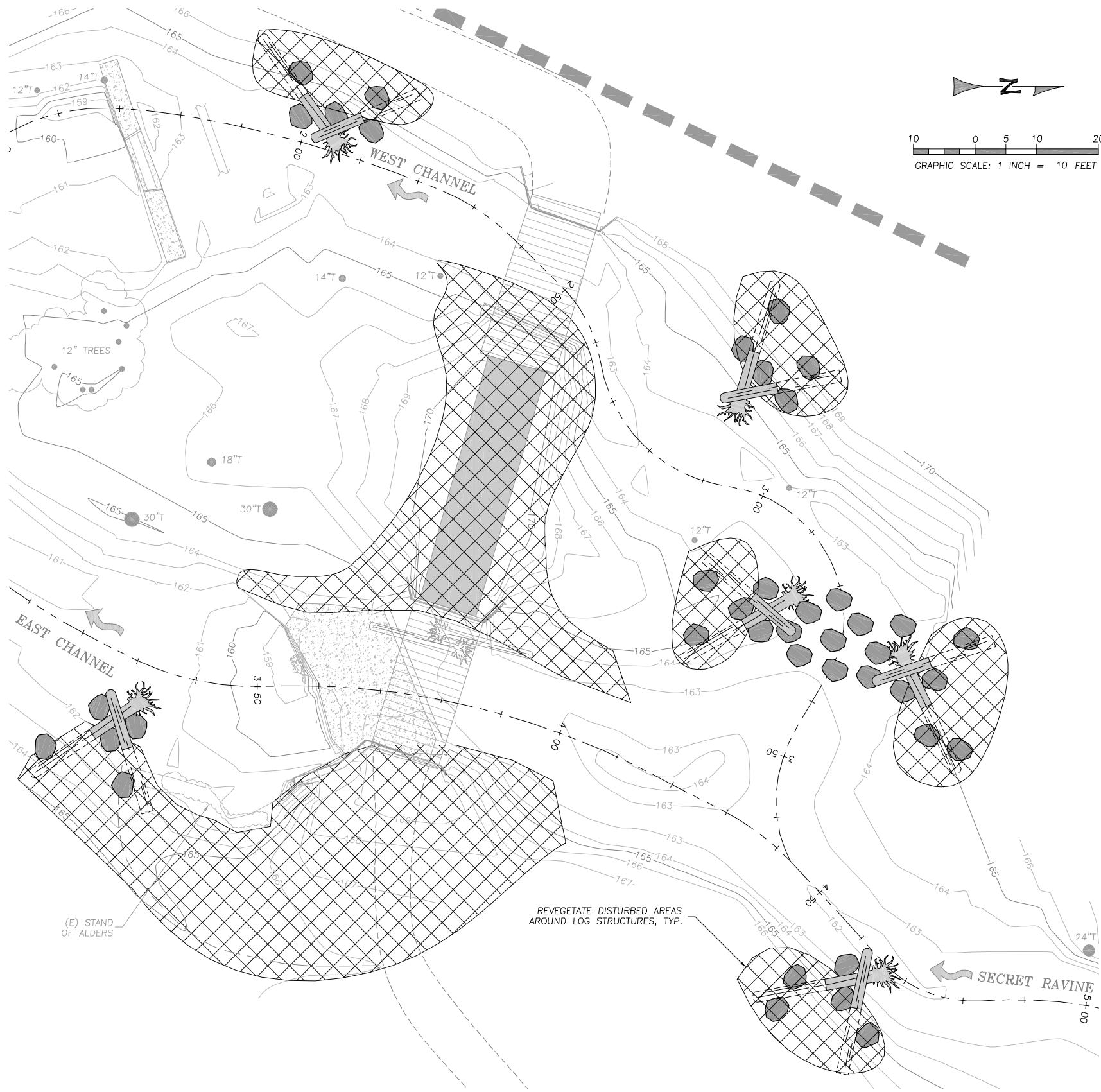
1. LOGS SHALL BE REDWOOD, SOUND AND FREE OF SIGNIFICANT DECAY, MEETING THE FOLLOWING SIZE CRITERIA:  
A. DIAMETER: 18 - 36 INCH  
B. LENGTH: 18 - 24 FEET  
C. AT LEAST ONE LOG WITH ROOTWAD ATTACHED PER STRUCTURE.



REVEGETATION NOTES

BROWSE PROTECTION TO BE DETERMINED.

- ALL DISTURBED AREAS TO BE REVEGETATED AS FOLLOWS:
1. RIPARIAN PLANTING ZONE – HAND-BROADCAST SEED MIX AS SPECIFIED IN TABLES AND SHOWN ON DRAWINGS. INSTALL WILLOW PLANTINGS AND CONTAINER STOCK AS SPECIFIED IN THE PLANTING PALETTE AND AS SHOWN ON THE DRAWINGS.
  2. STAGING AREA – HAND-BROADCAST SEED MIX AS SPECIFIED IN THE TABLES. CONTAINER STOCK AND WILLOW PLANTINGS SHALL NOT BE INSTALLED IN THE STAGING AREA.



REVEGETATION PLAN  
SCALE: 1"=10'

LEGEND

 RIPARIAN PLANTING ZONE

DRAFT  
NOT FOR CONSTRUCTION

PREPARED AT THE REQUEST OF:  
DRY CREEK CONSERVANCY  
P.O. BOX 1311  
ROSEVILLE, CA 95747

REVEGETATION  
PLAN

SECRET RAVINE  
FISH PASSAGE  
IMPROVEMENT PLAN  
90% SUBMITTAL

DESIGNED BY: M.W.W.  
DRAWN BY: C.M.R.  
CHECKED BY: M.W.W.  
DATE: 10/06/08  
JOB NO.: 08-729

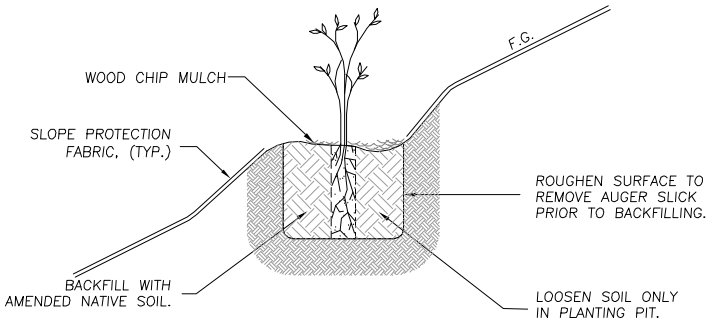
BAR IS ONE INCH ON  
ORIGINAL DRAWING,  
ADJUST SCALES FOR  
REDUCED PLOTS

PLANTING PALETTE

Container Plants and Cuttings	Location/ Elevation Range	Botanical name	Common Name	Propogation Method	Size	Spacing	Growth Form	Planting Group	Percent of Group	Quantity
	Channel Edge	Carex barbaeae	Santa Barbara sedge	Container or salvaged transplant	LN	1 ft O.C.	herb	A	50%	815
		Juncus balticus	Baltic rush		LN		herb		50%	815
		Cephalanthus occidentalis	common buttonbush	Container	DP or 1 Gal	3 ft O.C.	shrub	B	25%	45
				Cutting or salvaged transplant	3 to 5 foot length, 0.75 to 2 inches diameter		tree/shrub		75%	135
		Salix spp.	willow species							
	Floodplain	Cornus sericea	dogwood	Container	DP or 1 Gal	6 ft O.C.	shrub	C	33%	34
		Rubus ursinus	California blackberry	Container	DP or 1 Gal		shrub		33%	34
		Vitis californica	California grape	Container	DP or 1 Gal		shrub		33%	34
		Alnus rhombifolia	white alder	Container	T4	12 ft O.C.	tree	D	33%	8
		Fraxinus latifolia	Oregon ash	Container	T4		tree		33%	9
		Plantus racemosa	California sycamore	Container	T4		tree		33%	8

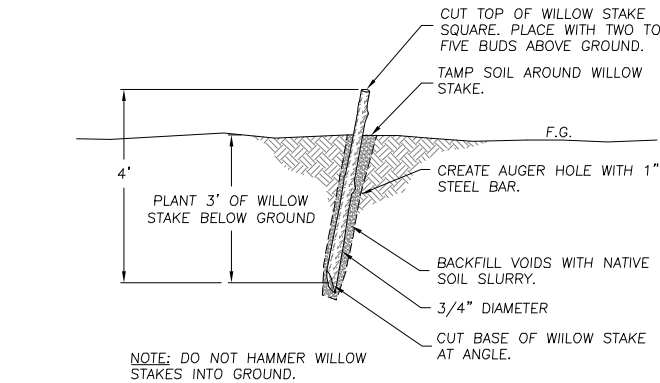
SEED MIX TABLE

	Location	Botanical name	Common Name	Method	lbs/acre	Spacing	Growth Form
Seed Mix	ALL	Achillea millefolium	yarrow	Broadcast seed	2	NA	forb
		Agrostis exarata	spike bentgrass	Broadcast seed	8		grass
		Artemisia douglasiana	mugwort	Broadcast seed	2		forb
		Bromus carinatus	California brome	Broadcast seed	8		grass
		Claytonia perfoliata	miner's lettuce	Broadcast seed	2		forb
		Collinsia heterophylla	Chinese houses	Broadcast seed	2		forb
		Deschampsia cespitosa	tufted hairgrass	Broadcast seed	8		grass
		Hordeum brachyantherum	California barley	Broadcast seed	8		grass
		Elymus glaucus	blue wildrye	Broadcast seed	8		grass
		Eschscholzia californica	California poppy	Broadcast seed	2		forb
		Leymus triticoides	creeping wild rye	Broadcast seed	8		grass
		Nassella pulchra	Purple needle-grass	Broadcast seed	8		grass
		Poa secunda	one sided blue grass	Broadcast seed	8		grass
		Vulpia microstachys	vulpia	Broadcast seed	8		grass



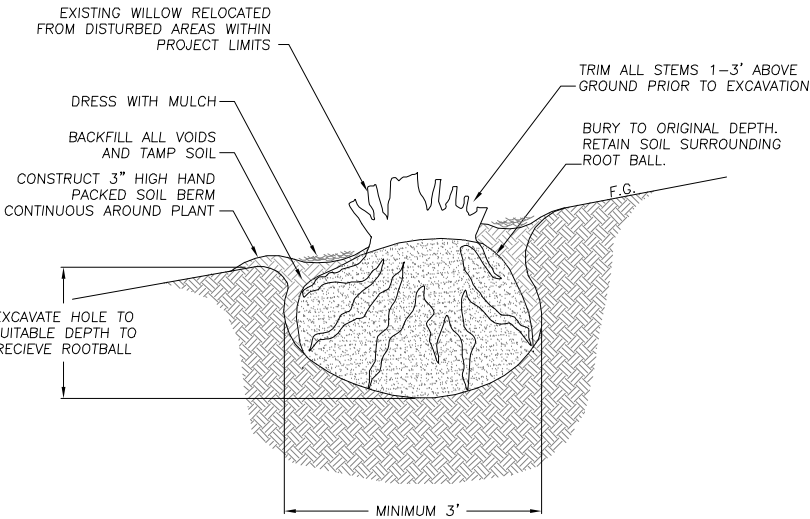
CONTAINER PLANTING ON SLOPES

SCALE: N.T.S.



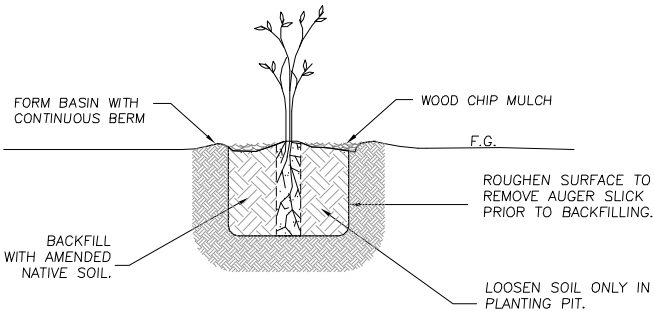
WILLOW STAKE

SCALE: N.T.S.



WILLOW TRANSPLANTING DETAIL

SCALE: N.T.S.



CONTAINER PLANTING

SCALE: N.T.S.

DRAFT  
NOT FOR CONSTRUCTION

PREPARED AT THE REQUEST OF:  
DRY CREEK CONSERVANCY  
P.O. BOX 1311  
ROSEVILLE, CA 95747

PLANTING  
PALETTE  
AND  
REVEGETATION  
DETAILS

SECRET RAVINE  
FISH PASSAGE  
IMPROVEMENT PLAN  
90% SUBMITTAL

DESIGNED BY: M.W.W.  
DRAWN BY: C.M.R.  
CHECKED BY: M.W.W.  
DATE: 10/06/08  
JOB NO.: 08-729

BAR IS ONE INCH ON  
ORIGINAL DRAWING,  
ADJUST SCALES FOR  
REDUCED PLOTS

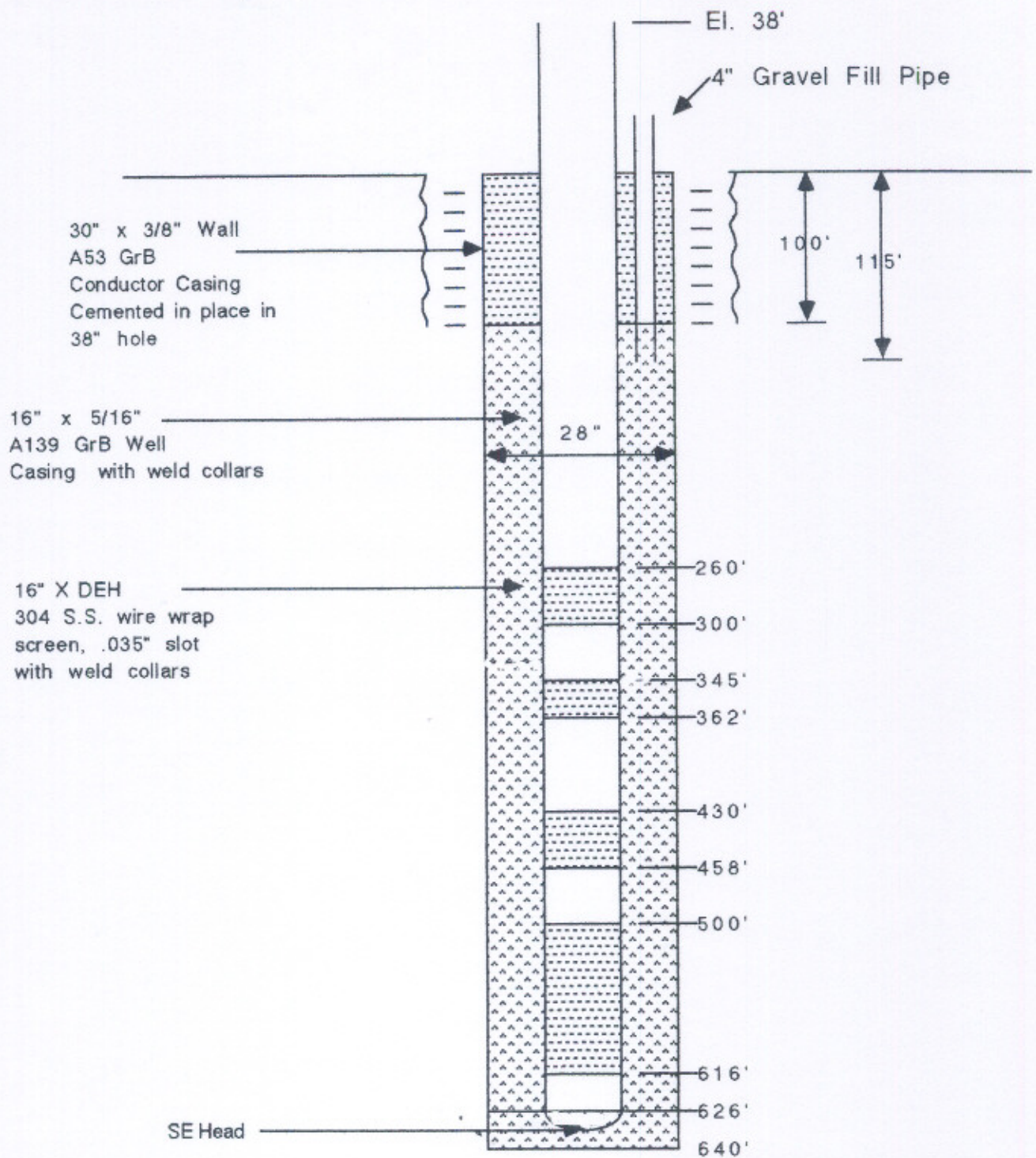
## Improvement Plans for Well No. 164



## Well 164 Profile and Casing Specifications



## Well 164





**Roscoe Moss  
Company  
Technical  
Data and  
Specifications**

**Casing and  
Screen  
Connections**  
The Welding Collar





Well casing and screen connections deserve more attention than they receive. To evaluate their importance, it must be recognized that the strength of the column is limited by the strength of the connections between its components. Careful observation of well failures shows that the majority involve casing or screen rupture, collapse or deformation. Frequently the problem originates in the connecting joints.

In many instances well casing is designed heavier than necessary. The intention is to give added strength to the column. This, however, results in increased costs and handling difficulties. Furthermore, a heavier wall may not provide the expected strength if the connections are weaker than the casing itself.

In addition to mechanical strength requirements, the following factors should be considered in joint design:

- Smoothness of internal wall and minimization of exterior diameter
- Alignment and verticality
- Ease of installation
- Economy

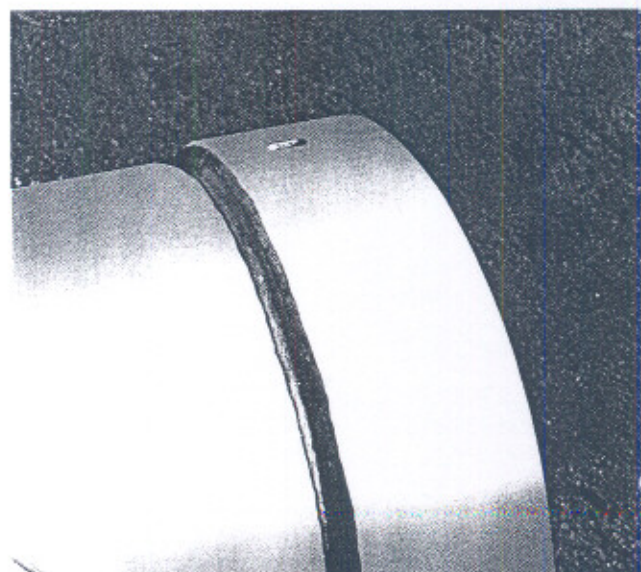
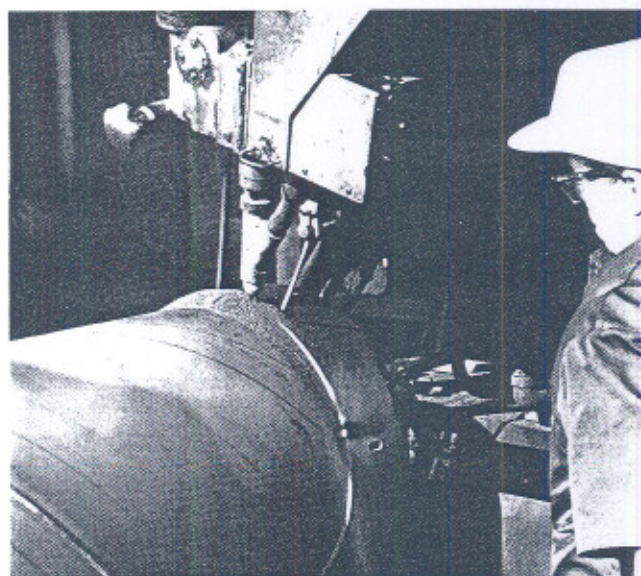
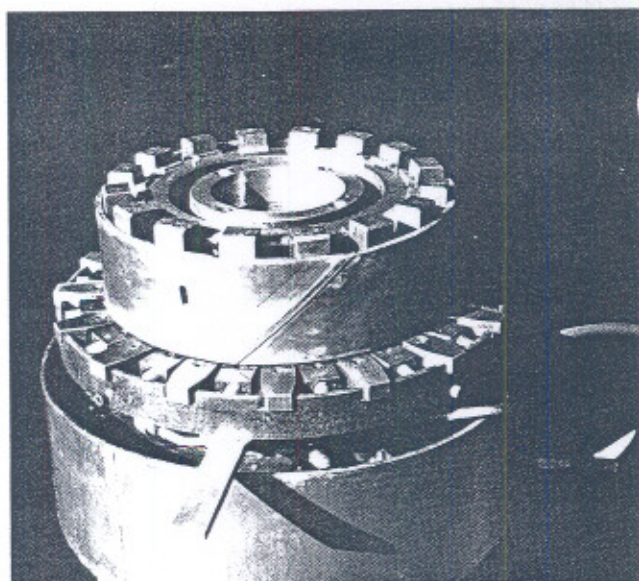
Over many years observation, research, experimentation and use, Roscoe Moss Company has concluded that the connection that best meets all requirements is the welding collar.

The "collar" is manufactured from the same quality steel as the casing, and is installed at the factory on one end of the joint. Machine sizing of the collar assures proper dimensions and easy assembly. Width of the collar is usually five inches, extending 3" beyond the casing. Three equidistant inspection windows are provided.

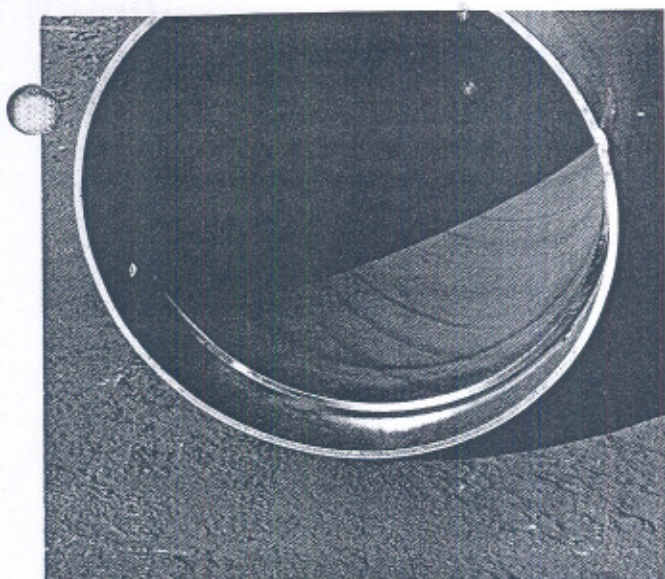
The ends of the casing are machined flat, perpendicular to the axis of the tube, varying not more than 0.010 inch at any point from a true plane at right angles to the axis. This is accomplished at the factory by facing the ends of each joint with a special machine.

The following procedure is recommended when installing casing or screen with welding collars:

- a) A length is lowered into the well with the collar facing upward.
- b) The plain end of the following length is inserted in the collar. True contact of the two joints must be verified by observation through the inspection windows.
- c) Spot welds should be placed through the three windows in order to hold the contact position.







- d) A fillet type weld is made covering the top edge of the collar continuously for the entire circumference. Two passes or welds are commonly applied to  $\frac{5}{16}$ " and thicker wall material.
- e) The inspection windows on blank casing sections should be seal welded to assure a leak proof connection.

The following electrodes are recommended for various casing and screen materials:

Mild Steel	E-6011 or E-7018
Copper Bearing Steel	E-6011 or E-7018
Low Alloy Steel	E-7018
(ASTM A 242 or equivalent)	
Stainless Steel	E-308L-16
(Type 304)	

Depending on wall thickness, the following electrode sizes are suggested:

Wall Thickness	Electrode Size
$\frac{1}{8}$ "	$\frac{1}{8}$ "
$\frac{3}{16}$ " to $\frac{1}{4}$ "	$\frac{5}{32}$ " to $\frac{3}{16}$ "
Over $\frac{1}{4}$ "	$\frac{3}{16}$ " to $\frac{1}{4}$ "

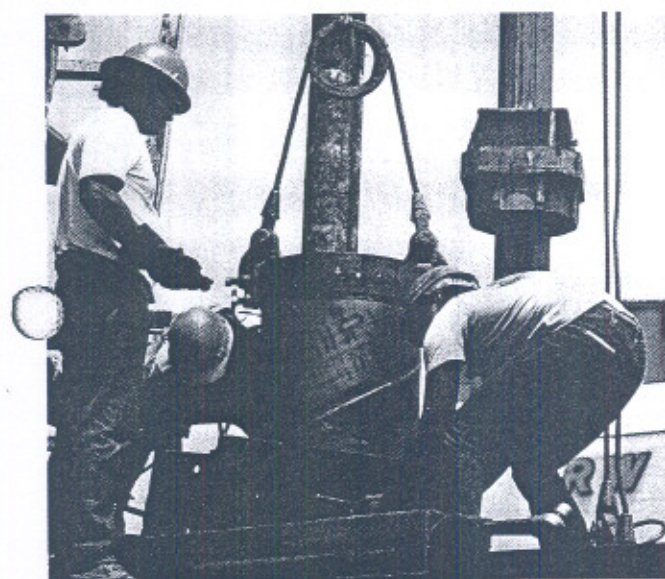
A properly made connection is as strong as or stronger than the casing. API threaded and coupled joint strength is, however, less than 70% of casing strength. Alignment of the column is as straight as practically possible by any means, and the inside wall is smooth and free of obstacles.

Welding collar outside diameters are smaller than threaded collars minimizing gravel bridging tendency and facilitating casing and screen installation. Removal of casing or screen sections requires only the removal of the field weld at the top of the collar. Such sections are easily reinstalled since the original faces of the casing have not changed.

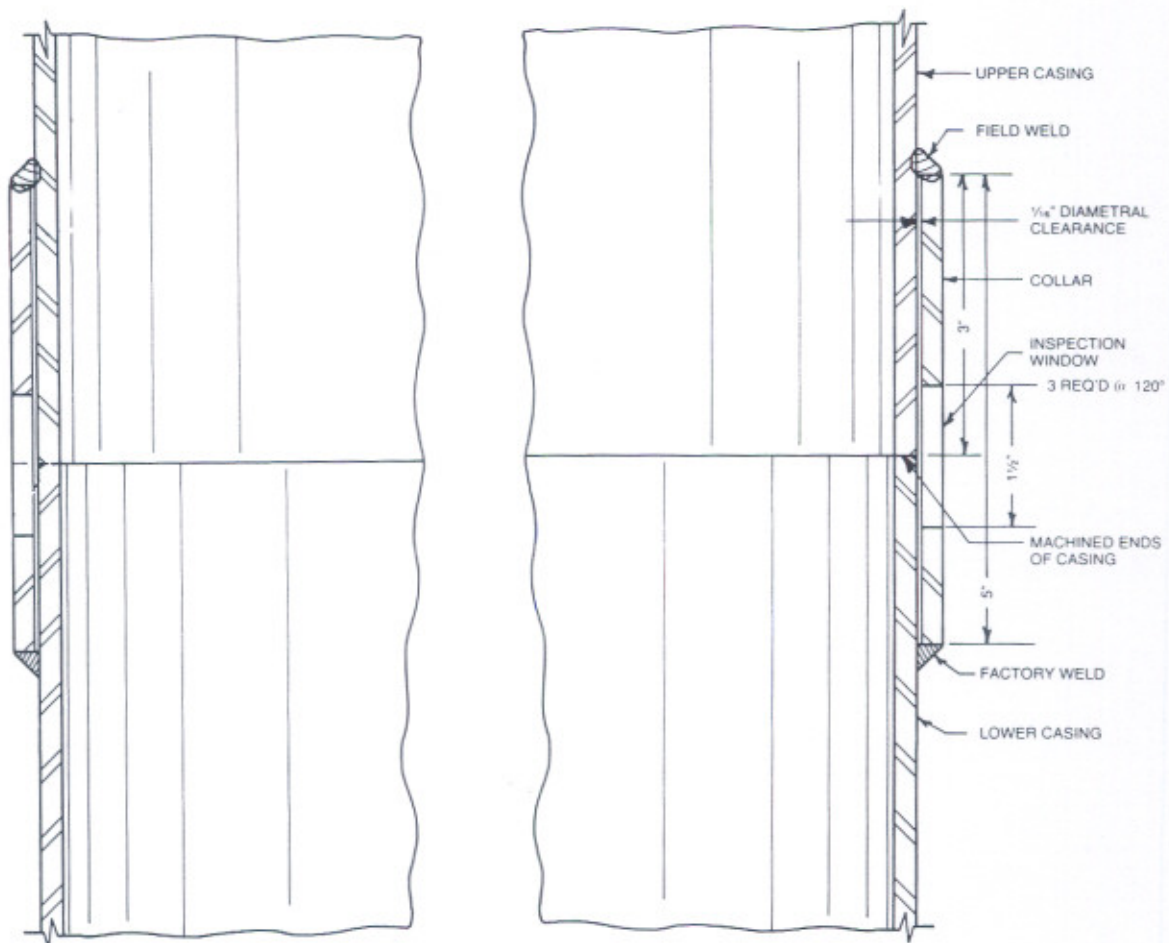
The economic advantages of this connection are obvious. Both direct and indirect costs are lower than those of other types of coupling systems for the following reasons:

- Initial cost of the collar is a fraction of that of a threaded connection.
- Ease and speed of installation compensate for the slight added cost, over plain-end welded connections. A fillet type weld is safer and can be made more easily.
- Transportation and handling damage is reduced and repairs are easily made in the field, avoiding loss of time and waste of materials.

Roscoe Moss Company supplies welding collars on all casing and screen at no additional charge on 6 meter minimum lengths.





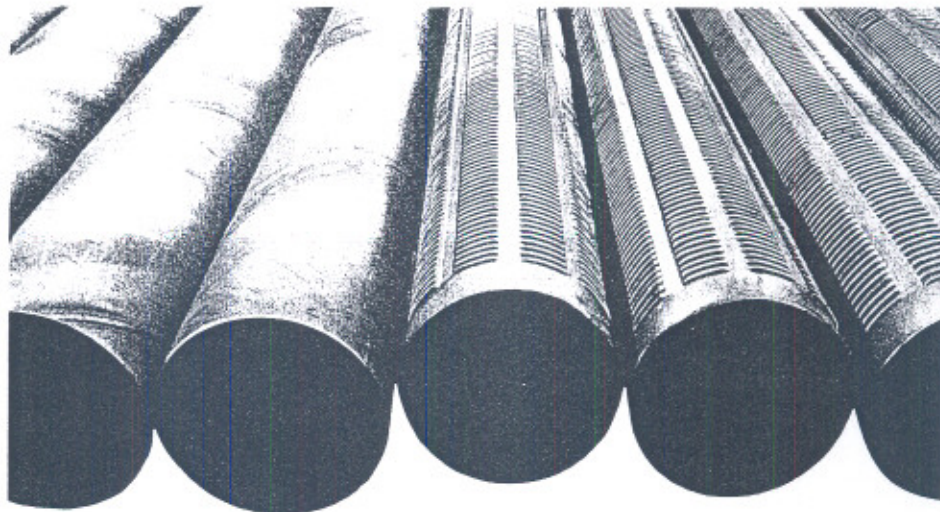


**Roscoe Moss Company**

4360 Worth Street/Los Angeles, California 90063/(213) 263-4111/Telex 67-7395  
Cable: Mosswells

# **Roscoe Moss Company Technical Data and Specifications**

## **Casings for Water Wells 6-20 inch diameter Corrosion Resistant Spiral Weld**





# General Information

"Roscoe Moss" 6" to 20" diameter corrosion resistant casings and screens are engineered specifically for use in water wells and are designed to fulfill their functions under the greatest variety of conditions. Structurally these materials meet the requirements of Grade B line pipe, and chemistry is designed to enhance corrosion resistance at economical cost. The tubes are manufactured in accordance with exacting ASTM standards by the spiral weld process. "Roscoe Moss" screens employ the louver configuration to give added strength, minimize plugging and provide better sand control. Two basic patterns are available

depending upon individual well requirements. The standard pattern provides an ample area of opening for most well demands. The "Full Flo" pattern with up to 4 times the standard area of opening is intended for use in wells where lower entrance velocity is required.

Ends are prepared for assembly by welding providing joints of greater strength, corrosion resistance and economy, than possible with standard threaded and coupled joints.

Slotted screens in various patterns are also available.

## PHYSICAL PROPERTIES\*

Yield Strength (psi)	35000 minimum
Tensile Strength (psi)	60000 minimum
*Conforms to ASTM A 139 Grade B.	

## CHEMISTRY

Carbon	.30% maximum	Sulphur	.05% maximum
Manganese	.30% - 1.0%	Silicon	.12% maximum
Phosphorus	.04% maximum	Copper	.20% minimum

## Dimensions and Weights

Nominal Size [inches]	Thickness		O.D.		I.D.		Weight	
	in.	mm.	in.	mm.	in.	mm.	lb./ft.	kg./meter
6"	3/16	4.76	6-5/8	168	6-1/4	158	12.81	19.08
6"	1/4	6.35	6-5/8	168	6-1/8	156	17.02	25.35
8"	3/16	4.76	8-5/8	219	8-1/4	210	16.79	25.01
8"	1/4	6.35	8-5/8	219	8-1/8	206	22.36	33.30
10"	3/16	4.76	10-3/4	273	10-3/8	264	21.15	31.47
10"	1/4	6.35	10-3/4	273	10-1/4	260	28.04	41.72
10"	5/16	7.94	10-3/4	273	10-1/8	257	34.71	51.70
12"	3/16	4.76	12-3/4	324	12-3/8	314	25.16	37.44
12"	1/4	6.35	12-3/4	324	12-1/4	311	33.38	49.67
12"	5/16	7.94	12-3/4	324	12-1/8	308	41.52	61.78
12"	3/8	9.53	12-3/4	324	12	305	49.57	73.84
14"	3/16	4.76	14-1/2	368	14-1/8	359	28.66	42.65
14"	1/4	6.35	14-1/2	368	14	356	38.05	56.62
14"	5/16	7.94	14-1/2	368	13-7/8	352	47.36	70.47
14"	3/8	9.53	14-5/8	371	13-7/8	352	56.98	84.88
16"	3/16	4.76	16-5/8	422	16-1/4	413	32.29	46.05
16"	1/4	6.35	16-5/8	422	16-1/8	410	43.73	65.07
16"	5/16	7.94	16-5/8	422	16	406	54.45	81.02
16"	3/8	9.53	16-5/8	422	15-7/8	403	65.09	96.96
18"	3/16	4.76	18-5/8	473	18-1/4	464	36.92	54.94
18"	1/4	6.35	18-5/8	473	18-1/8	460	49.07	73.02
18"	5/16	7.94	18-5/8	473	18	457	61.33	91.26
18"	3/8	9.53	18-5/8	473	17-7/8	454	73.10	108.89
20"	3/16	4.76	20-5/8	524	20-1/4	514	40.93	60.90
20"	1/4	6.35	20-5/8	524	20-1/8	511	54.41	80.96
20"	5/16	7.94	20-5/8	524	20	508	67.80	100.09
20"	3/8	9.53	20-5/8	524	19-7/8	505	81.11	120.82

## Theoretical Strengths Blank Casing

Nominal Size [inches]	Thickness in.	Collapsing Strength				Crushing Strength		Tensile Strength	
		psi	ft. water	kg./cm <sup>2</sup>	m. water	tons	kg.	tons	kg.
6"	3/16	1138	2628	80.0	801	65.9	49,783	113.0	102,511
6"	1/4	2690	6214	189.2	1894	87.6	79,469	150.2	136,258
8"	3/16	513	1185	36.3	361	86.4	78,380	148.1	134,353
8"	1/4	1211	2797	85.2	853	115.1	104,416	197.3	178,987
10"	3/16	259	600	18.2	183	108.9	98,792	186.6	169,281
10"	1/4	618	1430	43.4	436	144.3	130,907	247.4	224,438
10"	5/16	1227	2834	86.3	864	179.3	162,697	307.4	278,867
12"	3/16	163	378	11.4	115	129.5	117,480	222.0	201,395
12"	1/4	388	900	27.2	274	171.8	155,854	294.5	267,166
12"	5/16	765	1770	53.7	539	213.7	193,865	366.4	332,393
12"	3/8	1277	2950	89.8	899	255.2	231,512	437.6	396,982
14"	3/16	105	242	7.4	74	147.5	133,810	252.9	229,427
14"	1/4	246	570	17.3	174	195.8	177,627	335.7	304,542
14"	5/16	492	1140	34.5	347	243.8	221,172	417.9	379,113
14"	3/8	846	1954	59.5	591	293.2	265,985	502.8	456,130
16"	3/16	70	162	4.9	49	167.2	151,681	284.9	258,457
16"	1/4	168	390	11.8	119	225.1	204,207	385.9	350,083
16"	5/16	328	760	23.0	232	280.3	254,284	480.4	435,812
16"	3/8	576	1331	40.5	406	335.0	303,905	574.3	520,993
18"	3/16	50	116	3.5	35	190.0	172,365	325.8	295,561
18"	1/4	119	275	8.4	84	252.6	229,155	433.0	392,811
18"	5/16	233	540	16.4	165	315.7	286,398	541.1	490,878
18"	3/8	409	945	28.8	288	376.2	341,281	645.0	585,131
20"	3/16	37	85	2.6	26	210.7	191,144	361.1	327,585
20"	1/4	87	202	6.1	62	280.0	254,012	480.0	435,449
20"	5/16	168	390	11.8	119	349.0	316,608	598.2	542,678
20"	3/8	302	698	21.2	213	417.5	378,748	715.7	649,269



## Roscoe Moss Continuous-Slot Screens

Continuous-slot screens are designed for groundwater monitoring or production wells where there are a limited number of thin, well defined and highly permeable aquifers. This design may be useful when

maximum screen inlet area and screen entrance velocity are of concern.

Roscoe Moss manufacturing employs the most efficient process available. Cold drawn steel wire is wound onto longitudinal rods and welded at each contact point. The screen features a V-shaped orifice for minimum clogging by formation or filter pack particles.

### Strength characteristics of continuous-slot screens:

1. Wire-wrap screens have limited torsional strength.
2. Tensile strength is based on total cross sectional area of the vertical rods.  
TENSILE STRENGTH = ROD CROSS SECTION AREA x NUMBER OF RODS x YIELD STRENGTH (35,000 psi)
3. Theoretical hydraulic collapse strength can be calculated using acceptable formulas such as Timoshenko or Stewart. Calculations are based on material, diameter, ellipticity and thickness.

Roscoe Moss uses drawn triangular wire which has two dimensions: WIDTH (W), and THICKNESS (T). The thickness, (T), is the wire height. An equivalent thickness, ( $T_e$ ), is related to the measured (W) and (T) and is used in collapse calculations.

Actual ( $T_e$ ) is an equivalent thickness based on a theoretical rectangle having the same width.

( $T_e$ ) used in any collapse strength formula will supply only comparative numbers for a zero slot screen. To adjust for various wire and slot sizes, multiply the zero slot calculation by the ratio of closed area to total area.

ESTIMATED COLLAPSE STRENGTH = WIRE WIDTH ÷ (WIRE WIDTH + SLOT) x ZERO SLOT COLLAPSE

Example: 14" continuous slot mild steel screen  
w/ .050 slot opening—

Width = .215 Thickness = .302 ( $T_e$ ) = .250

Zero slot collapse

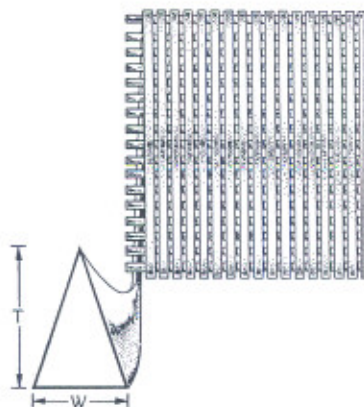
$$\left( \frac{.250}{14} \right)^3 \times 50,210,000 = 285 \text{ psi}^*$$

Screen Collapse

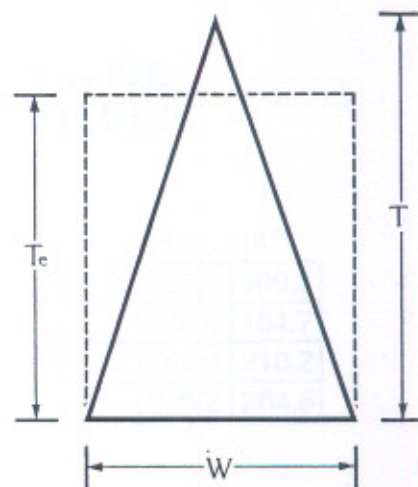
$$285 \left( \frac{.215}{.215 + .050} \right) = 231 \text{ psi}$$

Actual measured collapse strengths, compared to calculated collapse strengths, may differ.

For more information, ask your Roscoe Moss representative.



Estimates show ( $T_e$ ) = (T) x .8.



\*Stewart formula is used for purposes of simplicity.  
For more conservative estimates, use Timoshenko.

around an array of equally spaced longitudinal rods and welded at each point of intersection. The inlet-slot openings between adjacent turns

The well screen shall be manufactured by Roscoe Moss Company, 4360 Worth Street, Los Angeles, California 90063.



**Roscoe Moss  
Company**

4360 Worth St., Los Angeles, CA 90063, Telephone (213) 263-4111  
Telex: 285440 MOSS UR, 1 (800) 253-0548 U.S., 1 (800) 426-6644 Calif. Only

## Well 164 and Well 153 Technical Specifications



## SPECIAL PROVISIONS



## SECTION 01005

### GENERAL INFORMATION AND REQUIREMENTS

#### PART 1 - GENERAL

##### 1.01 GOVERNING DOCUMENTS

- A. All work performed under this contract shall be in accordance with the following general conditions:
  - 1. Sealed Proposal
  - 2. Agreement
  - 3. City of Sacramento - Standard Specification - June 1989 (hereinafter CSSS) Sections 1 through 8.
- B. All work performed under this contract shall be in accordance with the following special provisions:
  - 1. Technical Specifications
  - 2. Contract Drawing
  - 3. CSSS - Sections 10 through 38.
  - 4. Payment Bond
  - 5. Performance Bond
  - 6. California Labor Code - Chapter 4 of Division 3
  - 7. Greater Sacramento Area Plan - Executive Order 11246
- C. In the event that a conflict exists between any of the Governing Documents the following is the order of precedence:
  - 1. Technical Specifications
  - 2. Contract Drawings
  - 3. CSSS Sections 10 through 33

##### 1.02 DEFINITIONS

- A. For definition not found herein refer to CSSS Section 1.
- B. "Engineer" shall mean the City of Sacramento Director of Utilities or his appointed representative.
- C. "Drawings" shall mean the plans.
- D. "Provide" shall mean furnish and install in accordance to the plans and specifications.
- E. "Addenda" shall mean a written or graphic instrument issued prior to the execution of the Contract Agreement which modify or interpret the Contract Documents, Plans and Specifications, by additions, deletions, clarifications, or corrections.



- F. "Proposed Change Order" shall mean a written request for the contractor's cost and time estimate covering an addition, deletion or revision in the work within the general scope of the contract.
- G. "Change Order" shall mean a written order to the contractor authorizing an addition, deletion, or revision in the work within the general scope of the Contract Documents, or authorizing an adjustment in the Contract Price or Contract time.
- H. "Field Order" shall mean a written order from the Engineer to the contractor directing an addition or revision in the work.
- I. "Design Engineer" shall mean Kennedy/Jenks Consultants.
- J. "Resident Engineer" shall mean an appointed representative from the Construction Section, Engineering Division of the City of Sacramento's Department of Public Works or an appointed representative from the Department of Utilities.

#### 1.03 INTERPRETATION OF DRAWINGS

- A. The contract drawings consist of four (4) figures contained within these Special Provisions.
- B. The data given herein and on the drawings are as exact as could be secured, but their absolute accuracy is not guaranteed. The specifications and drawings are for the assistance and guidance of the Contractor; exact locations, distance, elevations, etc., will be governed by the various structures, and Contractor shall use same with this understanding.
- C. The drawings are diagrammatic, but shall be followed as closely as existing conditions and existing structures will permit. All deviations from the drawings required to make the work conform to the existing conditions and structures shall be made at the Contractor's expense. Prior to submitting his sealed proposal the Contractor shall inspect the site and verify all measurements and conditions and shall be responsible for the correctness of same. No extra compensation will be allowed because of differences between work shown on the drawings and measurements at the site.
- D. Catalog numbers on the plans and in the specifications are from the best available information and are for guidance and assistance. The Contractor shall verify all catalog numbers and install only suitable materials.



#### 1.04 QUESTIONS PRIOR TO BID OPENING

- A. All questions prior to sealed proposal opening concerning the contract documents shall be directed to the Project Engineer, Roland Pang at (916) 264-7829.

#### 1.05 WORK SCHEDULE AND TIME OF COMPLETION

- A. The time of completion for Development of Wells 153 and 164 (PN:ZC71) shall be eighty (80) working days and shall be as set forth in the Agreement, item 9.

#### 1.06 TIME OF AWARD

- A. It is anticipated that the acquisition of the real estate on which Wells 153 and 164 are to be installed should be completed prior to July 17, 1992. In the event that the transactions are not completed by that date, the City extends to ninety (90) days, the City Standard Specification 3-2 (Time of Award), from the stated forty-five (45) day limitation between the opening of the Proposals and the award of the contract. This forty-five (45) day extension shall also be added to the time provisions for awarding the contract to the second and third lowest responsible Bidders.

#### 1.07 INSURANCE

- A. In addition to the insurance requirements specified in the Agreement, the Design Engineer shall be named as an additional insured under the Contractor's liability insurance policy except for bodily injury or property damage claims arising directly from the rendering of engineering services.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Materials are specified in the Technical Specification Divisions 2 through 16 and CSSS Sections 10 through 38.
- B. Submit and obtain approval for all construction material before moving them onto the job site.

#### 2.02 CONTRACTOR ESTIMATES

- A. Contractor shall provide a written estimate for all proposed changes to the work. Estimate shall be on tabular preprinted



estimating sheets. Estimate shall list all items of deletion and addition to the contract. Each item shall have material, equipment and labor units extended and summed. Contractor shall apply the allowable overhead and profit (CSSS 8-16) for a total estimated cost of the proposed change order.

### PART 3 - EXECUTION

#### 3.01 PREBID SITE VISITS AND EXISTING DRAWINGS

- A. Arrangement for prebid inspection of the site can be made by calling Roland Pang (916) 264-7829.

#### 3.02 PREJOB CONFERENCE AND CONSTRUCTION SCHEDULE

- A. The Contractor, after delivery of the contract and at least three (3) days before beginning work, shall notify the Construction Division at (916) 264-5282 and arrange a prejob conference. At this conference, the Contractor shall deliver appropriate submittals and a Construction Schedule.
- B. Construction Schedule: Contractor shall submit a construction schedule for the entire project. Construction schedule shall be in the Critical Path Method (CPM) format. The proposed dates of commencement and completion of each of the various subdivisions of work required under these Special Provisions. Include submittals, procurement, demolition, disposal, delivery, shutdowns, installation, testing, and final inspection. CPM shall be arranged in work weeks and shall show manpower. No progress payments will be made until the CPM has been received by the Resident Engineer.

#### 3.03 CONTRACTOR COMMUNICATIONS

- A. All official communications between the Contractor and the City shall be made through the Resident Engineer.

#### 3.04 SUPERINTENDENT

- A. Contractor shall assign a superintendent to supervise all work and represent the Contractor on site. The Superintendent shall cooperate with the Resident Engineer and shall provide assistance at all times for the inspection of all the work: remove covers, operate machinery, or perform any reasonable work which, in the opinion of the Resident Engineer, is necessary to determine the quality or adequacy of the work. Superintendent shall also furnish material shipping labels and

packing slips to the Resident Engineer to verify that the material conforms with approved submittals and specifications.

- B. Superintendent shall layout all work in advance of construction and be responsible for coordination of all trades.

### 3.05 MATERIAL NONCONFORMANCE

- A. If any material does not conform with these specifications the Contractor shall, within three days after being notified by the Resident Engineer remove the materials from the project site or storage area.

END OF SECTION

**TECHNICAL SPECIFICATIONS  
FOR THE CONSTRUCTION OF  
WATER WELL NOS. 153 AND 164**





SECTION 02730

WATER WELLS

TABLE OF CONTENTS

SECTION	PAGE
PART 1 - GENERAL	1
1.01 DESCRIPTION	1
1.02 SCOPE	2
1.03 LOCATION OF PROJECT	3
1.04 PROTECTION OF SITE	3
1.05 QUALITY ASSURANCE	4
1.06 SUBMITTALS	5
1.07 REFERENCE SPECIFICATIONS	8
1.08 SUBSURFACE INVESTIGATIONS	8
1.09 NOTIFICATION OF ENGINEER	9
1.10 DRAWINGS	9
PART 2 - PRODUCTS	10
2.01 CASING AND SCREEN	10
2.02 DRILLING FLUID	11
2.03 SANITARY SEAL GROUT	12
2.04 GRAVEL	12
2.05 WATER	13
2.06 CLOSURE PLUG	13
PART 3 - EXECUTION	13
3.01 EQUIPMENT AND OPERATING REQUIREMENTS	13
3.02 DRILLING AND INSTALLING CASING	14
3.03 TESTING FOR PLUMBNESS AND ALIGNMENT	16
3.04 GRAVEL PACK PLACEMENT	16
3.05 GROUT PLACEMENT	17
3.06 DEVELOPMENT	17
3.07 TESTING FOR YIELD AND DRAWDOWN	18
3.08 TELEVISION INSPECTION	21
3.09 DISINFECTION AND WATER QUALITY TESTING	21
3.10 FINAL DISINFECTION, GAGING, AND CAPPING	22
3.11 ABANDONMENT OF HOLE	22
3.12 DESTRUCTION OF EXISTING WELL	22
3.13 CLEANUP	22

## SECTION 02730

### WATER WELLS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Work under this Section includes the furnishing of all labor, material, transportation, tools, supplies, plant, equipment and appurtenances necessary for the complete and satisfactory construction, development and testing of two new water supply wells located as shown and described in these Specifications.
- B. Work under this Section also includes the furnishing of all labor, material, transportation, tools, supplies, plant, equipment and appurtenances necessary for the complete and satisfactory demolition and abandonment of the City's existing Well No. 153.
- C. Work under this contract consists of Phase 1 and Phase 2 work for the City's new Well No. 164 on Kelton Way, and Phase 1, 2 and 3 work for the new well and existing well located at the City's Well No. 153 site as follows:
  - 1. Phase 1: Phase 1 consists of drilling a small diameter pilot hole/test well including all related work and services as specified herein.
  - 2. Phase 2: Phase 2 consists of drilling, constructing, developing and testing a water well complete including all appurtenant work and services as specified herein.
  - 3. Phase 3: Phase 3 consists of the demolition and abandonment of an existing water well complete including all appurtenant work and services as specified herein.

Work of the second phase is contingent upon the City finding that the conditions found in Phase 1 at each site justify performing subsequent phases of the work.

Upon completion of Phase 1 work at each site, the City will analyze the findings and render a decision within 72 hours on whether to terminate the further work at that site or proceed with Phase 2 work at each site. The City shall be the sole judge on whether the findings of Phase 1 justify continuing with Phase 2 (and/or Phase 3) work at each site and the Contractor shall have no claim for any costs over and above that for the actual work performed as covered in his lump sum bid and unit prices for each item of work.

- D. After commencement of construction, the Contractor shall pursue the work diligently to completion. The Contractor shall complete the new Well No. 153 production well prior to construction of Well No. 164.



## 1.02 SCOPE

- A. The intended operating capacity of each water supply well is 1,500 gpm. It is expected that each water supply well will have to be constructed to a depth of 600 feet, measured from the ground surface, in order to produce the desired yield. The final well depths will be determined after the pilot holes are drilled and sampling is completed. The Engineer reserves the right to increase or decrease the depth of each well by up to 100 feet without a change in the contract unit price. The wells shall be constructed as shown and as hereinafter described. The Contractor shall provide a sand production guarantee of not more than five (5) parts per million by volume.
- B. The work consists of the complete construction of two water wells that are gravel packed and provided with well casing and screen sections, developed and tested. The work includes:

### 1. Well construction:

#### Phase 1

- a. Drill a pilot hole for each well to a depth of 600 feet, or as directed by the Engineer. Perform water sampling, E-Log, drift indicator survey, sieve analyses, and well design confirmation.

#### Phase 2

- b. Ream the pilot hole or drill the well to the final diameter and depth specified.
- c. Construct a sanitary seal around the conductor casing extending down into the well 100 feet from the finished ground surface.
- d. Install casing and screen into bored hole.
- e. Test for plumbness and alignment.
- f. Disinfect and install gravel pack.
- g. Place grout backfill.
- h. Develop well.
- i. Test well.
- j. Conduct water quality sampling and well roundness survey.

- k. Disinfect well and test for bacterial contamination.
- l. Perform all specified operations incidental to well construction such as permitting, logs, testing for plumbness, filing of records, temporary capping, and cleanup.

### Phase 3

- m. Perform destruction of the City's existing Well No. 153. Refer to Section 3.11.
2. Construction requirements for this well are summarized below:
- |                                    |   |
|------------------------------------|---|
| Air Rotary Casing Hammer           | 8-inch diameter x 600 feet                      |
| Finished Bore Hole                 | 28-inch diameter x 600 feet                     |
| Casing and Screen Diameter         | 16-inch   |
| Conductor Casing Diameter/length   | 30-inch/100½ feet                               |
| Sanitary Seal Outside Diameter     | 38-inch   |
| Casing Material/length             | Steel/450 feet                                  |
| Screen Material/length             | Stainless steel wire wound/150 feet             |
| Drilling Method, pilot hole        | Dual-wall/tube reverse circulation, air drilled |
| Drilling Method, finished borehole | Reverse Rotary                                  |
3. The work generally described above and specified in detail below is included in the Unit Prices included in the Contractor's Sealed Proposal. If the Engineer should determine that additional or reduced depth of water well is required, it shall be constructed to such revised depth at the Unit Price bid for depths between 500 feet and 700 feet from ground surface. If greater depth variations and/or changes in the screen amount, casing and/or development and testing are required, such work shall be done in accordance with the Special Provisions.

## 1.03 LOCATION OF PROJECT

The test holes and wells shall be located on the sites as shown on the site maps included as part of these specifications. Each test hole and completed well are to be the same location. The Contractor shall check and confirm each test hole/well location with the Engineer prior to setting up the drilling equipment and starting drilling operations.

Work of the project shall be limited to the well sites as shown on the site maps unless the Contractor at his sole expense acquires additional work area.

## 1.04 PROTECTION OF SITE

- A. Except as otherwise provided herein, the Contractor shall remove all cuttings, drillings, debris and unused materials from the site and shall dispose of this material off the site. Upon completion of the work, the site shall be left in a condition equal to the adjacent areas.



- B. Wastewater from drilling, developing and test pumping shall be disposed of satisfactorily. The Contractor shall take care to discharge the water in such a manner as to cause no pollution, increase in turbidity, erosion, rutting of the ground surface, other damage to the existing land condition, flooding, or other damage to property.

Any temporary diking required to control the discharge of test water shall be removed after completion of the work and the land area restored to its original surface conditions.

- C. The Contractor shall provide all necessary temporary piping from the well to the point of disposal. Temporary disposal pipelines shall be laid along routes approved by the Engineer and may, if approved, be laid on the ground surface. The entire cost of placing and removing all disposal piping shall be included in the unit prices in the Proposal. The Contractor shall, as part of his precontract site inspection, determine what temporary disposal pipeline routes would be available to him and the lengths required. The entire cost of placing and removing all disposal piping shall be included in the unit prices included in the Proposal.
- D. Circulation pits may be constructed in the vicinity of the well at locations approved by the Engineer. After completion of the work, the pits shall be cleaned out and disposed of off the site and the pit filled in with backfill compacted to 90 percent of maximum density as determined by ASTM Designation D1557, "Method of Test for Moisture-Density Relation of Soil.."
- E. The actual work area including mud pit shall be fenced with a six (6) foot high chain link fence during the drilling operations and the developing of the completed well. Fence shall be placed and constructed so as to exclude unauthorized persons and animals from the well site. The fenced area shall be posted with "NO TRESPASSING" signs visible from all angles of approach. The Contractor shall remove and dispose of all fencing at the completion of the work.

#### 1.05 QUALITY ASSURANCE

- A. The Contractor shall, at his/her own expense, procure all permits, certificates, and licenses required of him/her by law for the execution of the work. He/She shall comply with all federal, state or local laws, ordinances or rules and regulations relating to the performance of the work including the requirements of the State of California Department of Water Resources Bulletin No. 74-90.
- B. The Contractor performing the work shall be skilled and have been regularly engaged for the past five years in the general class and type of work called for under this contract.

It is the intention of the City to award a contract only to a bidder who furnishes satisfactory evidence that he has the requisite experience and ability and that he has sufficient capital, facilities, and plant to enable him to prosecute the work successfully and promptly, and to complete it within the time stated in the contract.

#### 1.06 SUBMITTALS

- A. Contractor to submit six copies of all submittals plus the number the Contractor wants returned to him. Before the Contractor commences work on the water well, a plan of operation shall be filed with the Engineer for review.
- B. Submit name of firm proposed to perform the electric log along with a sample of the log data proposed to be furnished.
- C. Contractor's Log. The Contractor shall keep an accurate log of the material found during the drilling and show the elevations at which the material was encountered, with particular care being taken to locate all water bearing strata. The log shall be kept current and shall be available for examination by the Engineer at any time during the course of the work. A complete report of the log shall be submitted to the Engineer within 10 days after completion of each drilling operation. During drilling and well construction the Contractor's log shall include the following:
  1. The reference point for all depth measurements.
  2. The depth at which each change of formation occurs.
  3. Record of bits used.
  4. Drilling times for each 5-foot increment.
  5. Record of drilling fluids.
  6. The thickness of each stratum.
  7. The identification of the material of which each stratum is composed such as:
    - a. Clay
    - b. Sand or silt
    - c. Sand and gravel: indicate whether gravel is loose, tight, angular, or smooth; color
    - d. Cemented formation: indicate whether grains (if present) have natural cementing material between them e.g., silica, calcite, etc.
    - e. Hard rock: indicate whether sedimentary bedrock or igneous (granite-like, basalt-like, etc.)



8. The depth interval from which each formation sample was taken.
9. The depth of the static water level (SWL)
10. Total depth of completed pilot hole and well.
11. Any and all other pertinent information for a complete and accurate log, e.g. temperature, pH and appearance (color) or any water samples taken.
12. Depth or location of any lost drilling fluids, drilling materials or tools.
13. The depth of the sanitary seal.
14. The nominal hole diameter of the well bore above and below casing seal.
15. The amount of cement (number of sacks) installed for the sanitary and casing seal.
16. The depth and description of the well casing.
17. The description (including length, diameter, slot sizes, material, and manufacturer) and location of well screens.
18. Construction drawings, similar to Figure 4, indicating the as-constructed details of the finished well as follows:
  - a. Bottom of well
  - b. Bottom of screen, at each screened interval
  - c. Top of screen, at each screened interval
  - d. Bottom of casing
  - e. Top of reamed area
  - f. Top of gravel pack
  - g. Top of grout fill
  - h. Top of casing (inner and outer)
  - i. Static water level on date of well completion.

Reference all points from top of casing.

- D. Provide an electric log upon completion of the pilot hole drilling. The log shall indicate multiple-point resistivity log at a minimum 6-foot radius around the bore hole and a spontaneous potential. Provide a repeat section for quality control. Depth reference shall be the same as that for drilling. Provide an interpretation of the log and recommendations for finished well depth, screen locations, screen size, and gravel pack gradation.



- E. Drift Indicator Survey (Plumbness Survey): A mechanical drift indicator shall be run in the pilot hole and the drift determined at the intervals of 50 feet of depth to the total depth of the hole. If a deflection of less than one degree is indicated, the well shall be deemed in proper plumbness and alignment. If any reading taken indicates a deflection from vertical exceeding one degree, the Contractor shall immediately notify the Engineer. The mechanical drift indicator surveys shall be analyzed by the Contractor and the Engineer and, if in the opinion of the Engineer the alignment is not acceptable, the Contractor will be required to correct the alignment of the well or abandon and plug the hole as directed by the Engineer, and to drill, at his expense, another hole.
- F. Production Well Design. Upon completion of the pilot hole and with the results of the Contractor's sand analyses and electric logs available, the Contractor shall jointly, with the Engineer, confirm the design of the well. A detailed sketch of the proposed construction shall be made by the Contractor and approved by the Engineer will be noted thereon. This sketch shall show all details of the proposed well construction:
1. Diameter of pilot hole.
  2. Diameter of conductor casing and material.
  3. Length of conductor casing.
  4. Depth of bottom of conductor casing.
  5. Diameter of reaming.
  6. Depth of top and bottom of reaming.
  7. Type, length, diameter, and opening size of screen.
  8. Location of the top and bottom of screen at each interval to be screened.
  9. Location, length, diameter, and material for all screenblanks, if necessary.
  10. Method of making screen joints, bottom seal and attachment to casing.
  11. Diameter of casing.
  12. Length of casing.
  13. Size and amount of gravel packing.
  14. Depth and thickness of concrete grout.

Well construction shall not proceed until design is approved by the Engineer.

- G. The Contractor shall keep development and test records maintained on an hourly basis, showing production rate, static water level, pumping level, drawdown, sand production, and all other pertinent information concerning method of development.
- H. The Contractor shall file with the State of California Department of Water Resources, the Sacramento County Department of Public Works, and other required Agencies, such reports which may be required, including (1) notice of intent to engage in construction of a well, (2) report of completion, and (3) supplemental reports as may be required.
- I. Submit data to show that all materials to be used in construction of the well conform to the Specifications.
- J. Samples: Furnish, without additional cost to the City, such quantities of construction materials as may be required by the Engineer for test purposes. The Contractor shall cooperate with the Engineer and furnish necessary facilities for sampling and testing of all materials and workmanship. All materials furnished and all work performed shall be subject to rigid inspection, and no material shall be used in the construction work until it has been submitted and approved by the Engineer.

#### 1.07 REFERENCE SPECIFICATIONS

- A. Whenever the words "Bulletin No. 74" appear in the Specifications, reference is to the publication Bulletin No. 74-90 "Water Well Standards", Department of Water Resources, State of California.

#### 1.08 SUBSURFACE INVESTIGATIONS

- A. Formation Sampling of the Pilot Hole: At each change of formation, and at 10 foot intervals between changes in formation, the Contractor shall take two, one-quart representative samples of the formation and label, and preserve each sample in a container as approved by the City. Containers shall be identified with well number, sample depth and date taken.

Formation samples shall be discharged through the inner annulus of the cyclone separator in which the velocity is reduced to the level that representative samples can be obtained reliably.

The Contractor shall be responsible for collecting, bagging and/or preserving all formation samples and for the recording of all sample data. One sample from each water bearing aquifer shall be dried and sieved by the Contractor for grain size distribution, with selected sieves, so that no more than 30% of the formation material will be held on any one sieve, if possible. The uniformity co-efficient of the formation material



will then be determined, based on these test results. Formation samples not used for sieve analyses, as above specified, shall be turned over to the Engineer.

- B. Water Samples from the Pilot Hole. Water samples will be collected from water bearing strata. The Air Rotary Casing Hammer Drill (ARCH) drive casing will be stopped in the overlying confining layer above a potential water bearing zone. The borehole will be blown dry and the inner drill string will be advanced into the water bearing zone and then tripped out of the hole. A submersible pump (furnished by the Contractor) will be lowered into the borehole to pump out three casing volumes of water yielded by the formation. A clean teflon bailing device (furnished by the City) will then be lowered through the drive casing to collect the water sample.

Contractor shall assist the Engineer in the collection of the groundwater samples.

- C. E-Log: Refer to Section 1.06, D.

#### 1.09 NOTIFICATION OF ENGINEER

The Contractor shall be responsible to give notice to the Engineer in writing prior to performance of specific operations as follows for each well:

1. At least seventy-two (72) hours advance notice of intent to start drilling operations at well site.
2. Twelve (12) hours advance notice of scheduling the reaming of the well bore.
3. Twelve (12) hours advance notice of scheduling development and testing of completed well.
4. Twelve (12) hours advance notice of scheduling the plumbness and alignment test.

These minimum advance notification requirements are based on a normal sequencing and scheduling of work without unusual delays or interruptions. If delays or interruptions should occur, the Engineer shall be given as much advance notice as possible on the restart of work of the project.

#### 1.10 DRAWINGS

Figures 1 through 4 are appended hereto and form a part of this Specification.

## PART 2 - PRODUCTS

### 2.01 CASING AND SCREEN

- A. Conductor Casing: Conductor casing shall be new steel pipe conforming to ASTM Designation A139-84, Grade B; ASTM A120; ASTM A252-B; or ASTM A53-B, except that requirements for hydrostatic testing will be waived. Conductor casing shall have an outside diameter of 30 inches. The wall thickness shall be 3/8 inch, minimum. The casing material and thickness shall be subject to the review of the Engineer.
- B. Production Casing: Steel well casing shall be new steel pipe conforming to ASTM Designation A139-84, Grade B, having a minimum of 0.20 percent copper by ladle analysis. Requirements for hydrostatic testing will be waived. Well casing shall have an outside diameter of 16 inches with not less than 5/16-inch wall thickness.
- C. Joints: The casing shall be factory assembled in not less than 20 foot sections and shall contain not more than one longitudinal seam parallel to the axis of the casing and not more than one circumferential seam in 10 feet.

All joints of casing sections shall be closed by continuous welding. A welding sequence shall be followed which will avoid excessive distortion. All joints shall be tightly butted and shall be welded watertight with a minimum of 90% penetration. Welding shall be in accordance with applicable provisions of the latest edition of the specifications of the American Welding Society, "Transmission Pipelines".

If plain end, beveled for butt welding casing is used, no less than 4 straps, 1/4" thick and 1-1/2" wide shall be provided and used at each joint. If welding collars are used, no welding straps shall be required. Welding collars shall be provided with three sight holes, approximately 1-inch by 3/8-inch, equally spaced around the joint collar for checking the position of joint ends before welding.

- D. Base bid and unit prices shall be based on screen aperture size of 0.050 inches. Actual screen aperture size and screen location shall be determined based on results of the pilot hole testing, and confirmed by the Contractor.

All screen shall be furnished by the Contractor. The screen shall be stainless steel well screen and shall be factory fabricated of all welded construction. Weld rings to accommodate the specified casing shall be provided on the screens. The screen will be of the wire wound type with continuous slots as manufactured by UOP-Johnson, double extra strong screen design, equivalent Roscoe Moss Co. or accepted equal. The screen shall be placed at depths as determined after completion of the pilot hole.

Welding rod for joining the screen weld ends to the casing shall be furnished by the Contractor and shall be specifically suitable for joining the materials.



The actual length of perforated casing used in the well will be as directed by the Engineer based on the conditions encountered in drilling the test hole under Phase I.

The intent is that unscreened and screened casing sections may be of mixed order in the well casing and of intermixed lengths to take maximum advantage of water bearing strata encountered and to minimize the chances of sanding problems.

- E. Centering guides shall be welded to the outside of conductor, screen and well casing to center the elements in the bore. Centering guides shall, at a minimum, consist of 2-inch-wide by 3/8-inch-thick steel, having a bearing area of at least one-foot length at the casing/bore interface. Centering guides shall be of the same material as the casing or well screen to which they are attached, welded at both ends to the casing and screen and bent to form a guide at the required depth. Centering guides shall be sized to form a uniform annular space around the casing in the bore hole.

On conductor casing, at least eight centering guides shall be provided at each of the following locations: four feet from the bottom, four feet from the ground surface and at intervals of not over 40 feet between.

On the screen, centering guides shall be provided at the top and bottom and at intervals of not over 40 feet between.

On well casing, at least four centering guides shall be provided at each of the following locations; four feet from the bottom, four feet up from the bottom of the conductor casing, four feet below ground level, and at intervals of not over 40 feet between.

Graveling pipe shall be installed with the well casing. Graveling pipe shall be 4 inch size black threaded and coupled steel pipe, Schedule 40, and shall extend from a level ten (10) feet below the top of the gravel pack as hereinafter specified to six (6) inches above the ground level at the well. The graveling pipe shall be strapped or welded at the couplings to the well casing as it is installed.

## 2.02 DRILLING FLUID

Reverse Circulation Rotary Method: A circulating fluid shall be maintained at all times during the rotary drilling operations. No mud additive shall be used without demonstrated need. If an additive is required to do a satisfactory job, it shall be an inorganic, non-biodegradable material specifically designed for use as a drilling fluid. Such material shall be approved by the Engineer prior to use. The "mud" shall be designed to remove cuttings and support the walls of the bore. The volume of the sand separation pit shall be at least three times the calculated volume of the completed borehole.

If use of a drilling fluid additive is determined to be necessary and its use is approved by the Engineer, a mud monitoring program will be developed by the Contractor's drill fluids engineer for use by the Contractor.

The Contractor shall consult a qualified drill fluids engineer regarding the proposed drill fluid program. The fluid program and the fluid monitoring program shall be approved by the Engineer prior to the beginning of drilling.

## 2.03 SANITARY SEAL GROUT

A. Grout shall be proportioned 1 part cement to 1-1/2 parts sand and water not to exceed 6 gallons per sack of cement.

1. Portland cement shall conform to Federal Specification SS-C-192, Type I or Type III.
2. Sand shall be free from clay, earth or other deleterious matter and shall be sharp and clean. It shall be evenly graded as follows:

<u>Passing Sieve</u>	<u>Percent by Weight</u>
No. 4	95 - 100
15	35 - 75
50	10 - 25
100	2 - 8

### B. Grout Backfill

1. Grout backfill shall be installed in the annular space between the conductor casing bore and the conductor casing over the entire depth of the conductor casing and between the well casing and the well bore or conductor in the area between the top of the well and 100 feet below the ground surface for the sanitary seal.

## 2.04 GRAVEL

### A. Gravel Pack

1. The gravel pack mix design to be used in the annular space between the well casing and bore hole as shown on the drawing shall be in accordance with AWWA A-100 Section 6 and shall be a round, durable gravel, 6x12 supplied by a manufacturer normally engaged in the manufacture of water well gravel packs. Gravel pack shall conform to the following gradation.



<u>Sieve</u>	<u>Percent Passing</u>
No. 4	100
No. 6	85-100
No. 8	30-70
No. 10	10-40
No. 12	1-10
No. 14	Tr-5

Under no circumstances shall crushed rock be used for gravel pack.

If changes in the gravel pack mix design are recommended by the Contractor or Engineer after the pilot hole is completed, then the revised mix design shall be submitted to the Engineer for review after the pilot hole has been drilled and the aquifer strata classified.

2. A sample of the proposed gravel back shall be submitted to the Engineer for gradation testing, and approval shall be obtained in writing before any gravel is delivered to the well site. Gravel shall be disinfected in accordance with AWWA A100-Section 6.

## 2.05 WATER

- A. Water used in well construction and disinfection shall be potable. The City will provide a permit and reasonable amounts of water for construction as available at existing mains or facilities. The Contractor shall secure any rights-of-way necessary and provide all materials and equipment needed to deliver the water to the work site.

## 2.06 CLOSURE PLUG

- A. The bottom end of the casing shall be furnished with 10 feet of blank casing and closure plate of similar material and thickness as the casing.

## PART 3 - EXECUTION

### 3.01 EQUIPMENT AND OPERATING REQUIREMENTS

#### A. General

1. Equipment must be provided which is in first-class working order. No unnecessary delays or work stoppages will be tolerated. The Contractor shall be held responsible and payment may be withheld for damages to the well due to any cause of negligence or faulty operation.

2. The Contractor shall have a competent and responsible supervisor in attendance at the well site at all times during the construction, development, and test pumping of the well.
3. The Contractor shall take all measures necessary to protect the pilot hole and well bore from caving and ravelling.
4. The Contractor shall provide construction photos taken before, during and after construction. The Contractor shall provide a minimum of 48 standard, 35mm photos.

### 3.02 DRILLING AND INSTALLING CASING

#### A. General

1. Air rotary casing hammer drilling methods shall be used by the Contractor for the test holes under Phase I portions of this project. The drilling equipment shall consist of 6.5-inch diameter steel drive casing in conjunction with drill pipe with a 4.5-inch diameter tri-cone roller drill bit. The drill rig shall have sufficient compressor capacity to operate at depths of up to 700 feet.

Immediately after the pilot hole is drilled an electric log must be run. The Contractor shall add an environmentally benign drilling fluid (refer to Section 2.02) to the hole if required to hold the hole open during the logging operation.

The Contractor shall use equipment suitable for the subsurface conditions anticipated to be encountered. Since the Phase 2 wells are to be drilled in the same location as the test holes, the Contractor shall use procedures resulting in straight and plumb pilot holes.

2. It is intended that the Contractor drill the wells by the reverse rotary method. In addition, the Contractor shall install well casing, screen, sanitary seal, grout backfill, and gravel pack using methods approved by the Engineer as circumstances may require.
3. The Contractor shall drill the pilot hole, complete design of the well, and receive approved prior to continuing with the drilling of each final well bore.
4. Field assembly of casing shall be by welding. All welding shall be done in accordance with the specifications of the American Welding Society, and welders shall be qualified in accordance with the latest revision of the AWS Standard Qualification Procedure.



## B. Conductor Casing

1. The conductor casing for the sanitary seal shall be set in a reamed hole having a minimum diameter as specified in Part I. The conductor casing shall be landed into impermeable material and shall be anchored securely at the ground surface to prevent following. The setting will be to a minimum depth of 100 feet. The conductor casing shall project 0.5 feet above existing ground level.
2. After the conductor casing has been installed, it shall be sealed by filling the annular space between the reamed bore and the conductor casing with grout as specified below. Upon completion of grouting, cement shall be visible above the surface of the ground outside the conductor casing.
3. The Contractor shall make available sufficient grout to completely fill the annular space. Grout shall be placed by tremie pipe as described in paragraph 3.04 A, hereinafter, or by other approved method which shall provide for complete filling of the annular space. After placement, the grout shall be allowed to set for a period of not less than 48 hours for Type III cement and not less than 72 hours for Type 1 cement, after which the plug at the bottom of the conductor casing may be drilled. Drilling fluid shall be circulated to eliminate all cement contamination prior to beginning any other drilling operations.

## C. Well Casing and Screen

1. From the base of the conductor casing, the well bore shall be constructed to the dimensions specified, or as modified after review of the Contractor's pilot hole report.
2. After final reaming of the bore as above specified, work shall proceed continuously and without interruption until the casing has been set, the gravel pack fully installed, and the surface seal placed, all as hereinafter specified.

The well bore shall be maintained full of the drilling fluid at all times until the casing, gravel pack, and surface seal are set and placed. Circulation of drilling fluid shall be continuous until necessary to discontinue for setting the casing and screen, unless in the judgement of the Contractor continued circulation is unnecessary. However, in any event, the Contractor shall be responsible to maintain a free, uncollapsed, bore hole.

Immediately after the final boring or reaming to the specified diameter, the Contractor shall proceed to set the well casing and shall adjust the drilling fluid to the proper consistency for placing the gravel pack as approved for the well. The Contractor shall schedule the work so that the casing and gravel pack are placed with the minimum possible delay after boring or reaming the well bore to final size. The Contractor shall be responsible that the well bore be true and full twenty-eight (28) inch minimum size so that a full and complete gravel envelope is achieved. Failure



of the bore to take at least the calculated volume of gravel with allowance for normal losses and compaction shall be cause for rejection of the well by the City.

3. Well casing shall be assembled with screen sections located as shown on the drawings or as directed by the Engineer following receipt of the Contractor's pilot hole report. Total length of casing, screen and closure piece shall be subject to review by the Engineer.
4. Well casing installation shall be by methods that will insure no damage to the hole or casing. The top of the well casing shall extend two and one-half feet above the ground.
5. The casing shall be suspended above the bottom of the hole at a sufficient distance to insure that none of the casing will be supported from the bottom.

### 3.03 TESTING FOR PLUMBNESS AND ALIGNMENT

- A. The drilled and cased well shall be tested for plumbness and alignment prior to gravel packing and grout sealing. The Contractor may also make additional tests as the well and casing are being constructed for control of the work. The Contractor shall furnish all labor, tools and equipment and shall make the tests in accordance with the provisions of AWWA Specification A-100, Section 1-8 to the satisfaction of the Engineer.
- B. Throughout its entire depth, the completed well shall be sufficiently plumb, straight and have such true diameter and cross section as will permit the proper functioning and efficient operation and future servicing of the pumping equipment to be installed later in the well. The Contractor will test the completed well after grouting in accordance with the provisions of AWWA Specification A-100, Section 8. The Contractor shall be responsible for making all corrections to the construction necessary to provide an acceptably plumb and aligned well.

### 3.04 GRAVEL PACK PLACEMENT

- A. Gravel placement procedures shall be appropriate to the drilling method elected by the Contractor. Gravel shall be placed in a manner that will prevent segregation and will fill the annular space completely to a point 100 feet below groundsurface. Gravel shall be disinfected in accordance with AWWA A100-Section 6.
  1. A tremie pipe or tube shall be used to place gravel. It shall be of sufficient length to reach the bottom of the gravel pack and be raised to match the gravel level as gravel is placed. Rate of adding gravel to the well shall not exceed a vertical rise of 1-1/2 feet per minute.



2. Before the gravel packing operations begin, the Contractor shall make adequate preparations to insure that circulation in the well will be continuous. The Contractor will not be allowed to stop circulating from the time that gravel placement begins until the time when the gravel pack is completely in place. The Contractor shall also make adequate preparation in terms of a gravel stockpile and gravel handling equipment to insure uninterrupted feed. After the gravel is in place, circulation and water jetting shall continue in stages until gravel is consolidated and cleared.
  3. A careful record shall be kept of the amount of gravel added during placement and consolidation. The total quantity of gravel placed in the annulus during placement and development shall be at least as great as the calculated volume of the annulus.
- B. Graveling Pipe: Furnish a gravel pipe, as specified in Part 2, installed from 110 feet below existing grade to the top of the well for future addition of gravel as shown on the drawings.

### 3.05 GROUT PLACEMENT

- A. Grout shall be placed in a manner that will fill the annular space around the well casing completely. Placement shall be from the bottom up, using a tremie pipe or tube method. The minimum size tremie pipe used shall be two inches inside diameter. When making a tremie pour, the tremie pipe shall be lowered to the bottom of the zone being grouted and raised slowly as the grout material is introduced. The tremie pipe shall be kept full continuously from start to finish of the grouting procedure with the discharge end of the tremie pipe being continuously submerged in the grout until the zone to be grouted is completely filled.
- B. A careful record shall be kept of the amount of grout used to fill the annular space.
- C. After grout placement is complete, operations that may damage the seal are prohibited for a period of 48 hours.

### 3.06 DEVELOPMENT

- A. Development of the well is an operation separate and apart from the test pumping; the object being to clear the well of sand and any remaining drilling fluid mudcake and allow the water to enter the casing so that the testing for production can be done without interruption.
  1. The Contractor shall furnish all necessary pumps, compressors, plungers or other needed equipment and shall develop the well by surging, jetting or other such approved methods as shall be necessary to give the maximum yield of water per foot of drawdown, and shall extract from the water-bearing formation the maximum practical quantity of such sands as may, during the life of the well, be drawn through



the screen when the well is pumped under maximum conditions of drawdown. All equipment shall be steam cleaned prior to being introduced to the well.

2. Development of the well shall proceed for a minimum of four 8 hour tours or uninterrupted for a minimum of 24 hours. If development time exceeds 32 hours, the Contractor shall be reimbursed for time beyond 32 hours as specified in the Special Provisions. Proposed duration shall be approved by the Engineer and until no further removal of sand and drilling material is obtained. Development shall begin at the top screen section and work down. The Contractor shall bail the well as required to remove any sand and debris drawn into the casing by the development procedure. The Engineer shall be notified in advance to witness development of the well in accordance with Section 1.09 of these Special Provisions.
3. During the development of the well, a stream of clear water shall be introduced into the top of the graving pipe to help wash that section of the gravel pack located above the perforations or standing water level. The volume of water added shall be sufficient to give a washing action (at least 10 gallons per minute) to remove the mud and silt from the gravels.

### 3.07 TESTING FOR YIELD AND DRAWDOWN

#### A. General Requirements

1. After the well has been developed and cleaned out and the depth of the well accurately measured, the Contractor shall notify the Engineer to that effect and shall make the necessary arrangements for conducting a pumping test. The pumping test shall be as specified herein, in the presence of the Engineer.
2. The test pump and discharge pipe shall be washed with a 0.5 percent chlorine solution as it is lowered into the well. After it has been placed into position, the pump shall be operated so as to thoroughly mix the disinfectant with the water in the well.
3. The Contractor shall furnish, install and remove at completion of the test all necessary pumping equipment, driver, piping and measuring devices for the test. The pump shall have a capacity of not less than 3,000 gpm at the head required for maximum drawdown. The pump setting shall be at such a depth as to be submerged at maximum drawdown.
4. The pumping unit shall be complete with prime mover of ample power, controls and appurtenances and shall be capable of being operated without interruption for a period of twenty-four (24) hours.



5. The Contractor shall furnish all necessary discharge piping and appurtenances for the pumping unit, which shall be of sufficient size and length to conduct the water being pumped to an approved point of disposal. The Contractor shall also furnish, install and maintain calibrated equipment of approved size and type for measuring the flow of water; such equipment to be weir box, orifice or water meter. To measure the elevation of the water level in the well, an air test line shall be provided that is complete with calibrated gauge activated by compressed air furnished by the Contractor. Unless otherwise permitted, the air line shall be securely fastened to the pumping unit and shall terminate approximately at the maximum desired pumping depth. In no case shall the air line be nearer than 2 feet to the end of the suction pipe.
6. The Contractor shall furnish all labor, fuel and incidental materials required for the duration of test as specified below.

#### B. Duration of Tests

1. Step Test: Run at the rates of production and duration of times as directed by the Engineer. A minimum of four tests of four hour duration shall be performed, each at consecutively higher rates of production.
2. Continuous Test: After the step test and a 24 hour recovery period, the testing of the well shall proceed in one continuous uninterrupted operation for a period of twenty-four hours. Should the testing period cease at any time greater than one percent of the accumulated test time for any reason whatsoever before the twenty-four (24) hour testing period shall have expired, such testing shall be forthwith, again, commenced and shall run for twenty-four (24) hours, as herein specified, at no additional cost to the City. If stability has not been achieved after the 24-hour continuous test, an additional 24-hour testing period shall be performed with payment negotiated as specified in the Special Provisions.

#### C. Procedure

1. Prior to starting each pumping test, the static water level in the well shall be determined. The pump shall be started and operated continuously for such period that, for each successive rate specified by the Engineer, the water level in the well shall become stable. Pumping at each successive rate shall be continued for a minimum period as selected by the Engineer after the water level in the well has become stable. During the progress of the test, measurements shall be taken as specified below to determine:
  - a. Water level in well.
  - b. Rate of pumping.



2. After each test, a recovery period equal to the test duration shall be provided. During recovery periods, water level measurements shall be made at one minute intervals for the first 15 minutes and at five minute intervals thereafter.
3. Measurements of pumping rate and water level shall be obtained from the production well at a minimum of every one minute for the first 10 minutes of the test, every two minutes for the next 10 minutes, every five minutes for the next 40 minutes, every 15 minutes for the next hour, every 30 minutes for the next three hours, and hourly for the remainder of the pumping period. Recovery water level measurements shall be made with the same frequency until sufficient data has been collected to extrapolate the full recovery of the well or until the Engineer requires no further data. This period shall not exceed 1/3 of the duration of the pumping portion of the test.
4. At the completion of test pumping, the gravel pack level shall be measured and, if necessary, the gravel envelope shall be refilled.
5. A means of measuring gravel level and a means of water sampling shall be provided at the Contractor's expense so that the Engineer can keep continuously informed on the progress of development.

The following conditions must be achieved by the end of the development and testing period:

- a. Sand production of not more than five parts per million by volume.
- b. Turbidity of five N.T.U. maximum.
- c. The quantity of gravel placed in the annulus shall be at least equal to the calculated volume of the annulus.
- d. There shall be no further settlement of the gravel envelope.

Sand production shall average less than five (5) parts per million (ppm) when measured on one minute intervals between twelve (12) and fifteen (15) minutes after commencement of pumping at the design capacity of 1,500 gpm. Sand production shall be measured by a centrifugal sand separator similar to that described in the Journal of the American Water Works Association, Vol. 46, No. 2, February, 1954. For purposes of the sand guarantee, sand production shall be defined as the average concentration measured at the well's design capacity over a three (3) minute period with readings taken at 12, 13, 14, and 15 minutes after pumping is commenced. The Contractor shall be responsible for furnishing equipment and providing measurements.

Turbidity shall be measured in nephelometric turbidity units as described in Section 214A of Standard Methods, 17th Edition, 1989. Turbidity analyses shall be arranged for and paid for by the City.

6. Record of Pumping Tests: The Contractor shall keep accurate records of the pump test and furnish copies of all records to the Engineer upon completion of the test. The records shall also be available to the Engineer for inspection at any time during the test. The records shall include physical data describing the construction features such as but not limited to: well depth and diameter; complete screen description, length and setting; a description of the measuring point; the methods used in measuring water levels and pumping rates. Records of measurement shall include the data of the test, the clock time and elapsed pumping time of each measurement, the depth to water below the measuring point, the pumping rate at the time of measurement and any pertinent comments or conditions that may affect the measurements. Frequency of water level measurements before, during, and after pumping shall be as specified by the Engineer.

#### D. Cleaning

1. After the completion of the test, the Contractor shall remove by bailing, sand pumping or other methods any sand, gravel or other foreign material that may have become deposited in the well. Prior to capping the well at job completion the well shall be completely bailed and cleaned.

### 3.08 TELEVISION INSPECTION

After the well has been constructed, developed and tested, the well shall be inspected by video camera by the Contractor. A copy of the video shall be delivered to the City.

### 3.09 DISINFECTION AND WATER QUALITY TESTING

After the well has been constructed, developed, and tested, it shall be cleaned and disinfected in accordance with AWWA Standard A100-Section 11. The chlorine solution volume shall be not less than twice the calculated volume of the well. All water pumped to waste shall be dechlorinated to a chlorine residual less than 1 mg/l prior to being discharged.

After the well is pumped to waste to remove all disinfectant, three one-gallon water quality samples shall be taken and submitted to the Engineer for analysis. The disinfection procedure shall be repeated as necessary until tests for total coliform are negative.



### 3.10 FINAL DISINFECTION, GAGING, AND CAPPING

- A. Immediately prior to removal of the test pump, conducting the roundness survey, and capping, the well shall receive a final disinfection in accordance with AWWA A-100, Section 11. Disinfection, pump removal, roundness survey, and capping shall all be completed in one shift.
- B. Upon completion of testing and disinfection, the well shall be checked for roundness by passing a disinfected 15-inch diameter device down the entire length of the well. Clear passage of the device shall be achieved.
- C. At all times during the progress of the construction, the Contractor shall protect the well in such a manner so as to effectively prevent either tampering with the well or the entrance of foreign matter into it, and, upon its completion, he shall weld a 1/4-inch steel plate on the end of the casing to the finished elevation shown on the Drawings.

### 3.11 ABANDONMENT OF HOLE

- A. In the event the Contractor shall abandon a hole because of loss of tools or other causes which are his responsibility, the Contractor shall, at his own expense, plug and fill said hole in conformance with regulations of Water Well Standards: State of California, Bulletin 74-90 for abandonment of water wells.
- B. If it is determined that strata encountered in all or part of the pilot hole is unsuitable, the Contractor shall abandon that portion of the pilot hole and shall fill the hole with grout.

### 3.12 DESTRUCTION OF EXISTING WELL

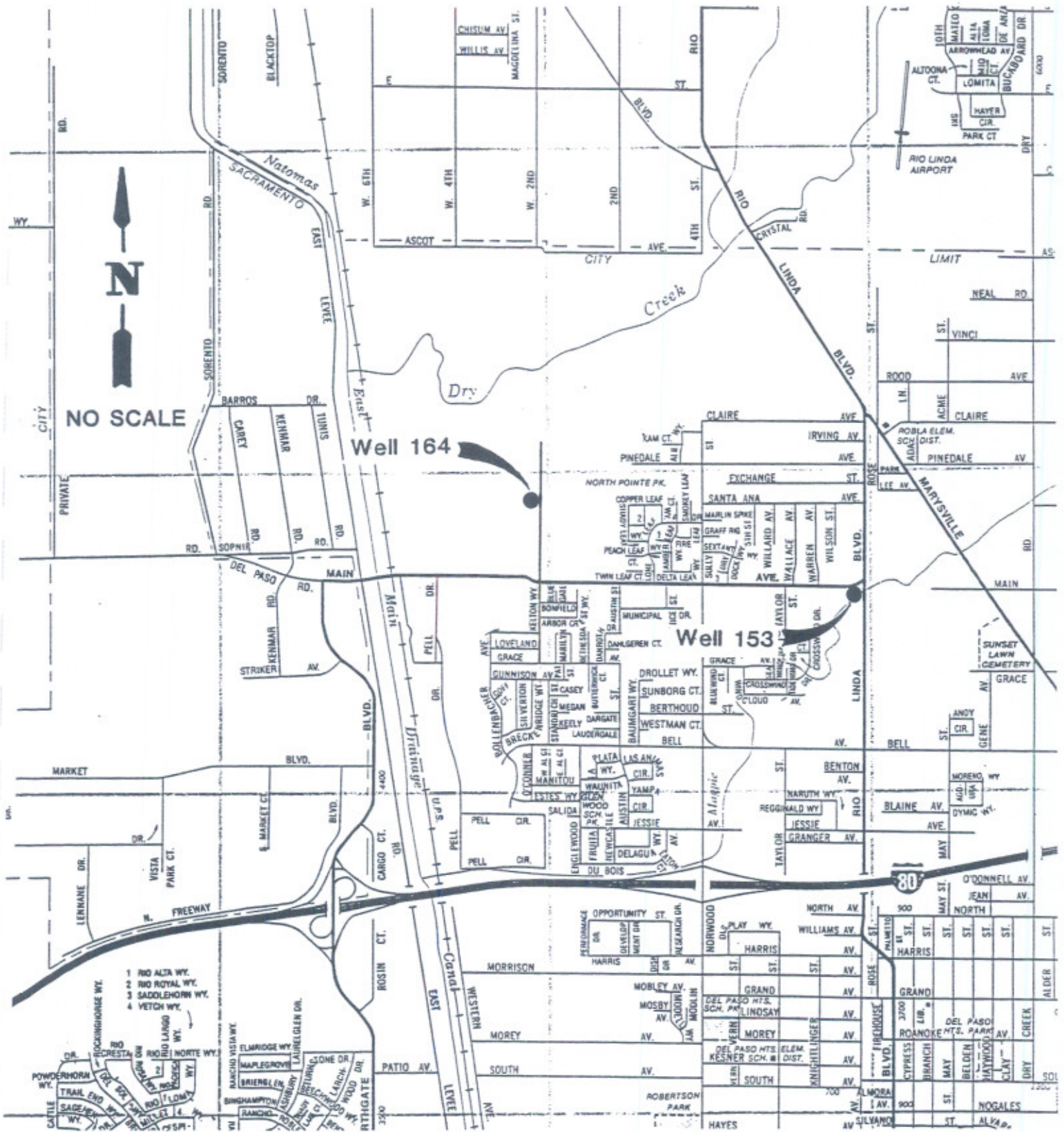
After satisfactory completion of Phase 2 work at the City's Well No. 153 site, the City will direct the Contractor to proceed with Phase 3 work, destruction of the existing Well No. 153. The Contractor shall perform the work in conformance with regulations of Water Well Standards: State of California, Bulletin 74-90 for destruction of water wells, and Sacramento County Standards and regulations. The Contractor shall be responsible for obtaining all necessary permits for destruction and abandonment of the existing well.

### 3.13 CLEANUP

- A. Upon completion of each new well, the Contractor shall remove all equipment and drilling spoil from each site and restore the sites to a condition for continued operation of the plant and other project construction. Cleanup shall include restoration of any area disturbed by disposal of water during development and test pumping.

END OF SECTION



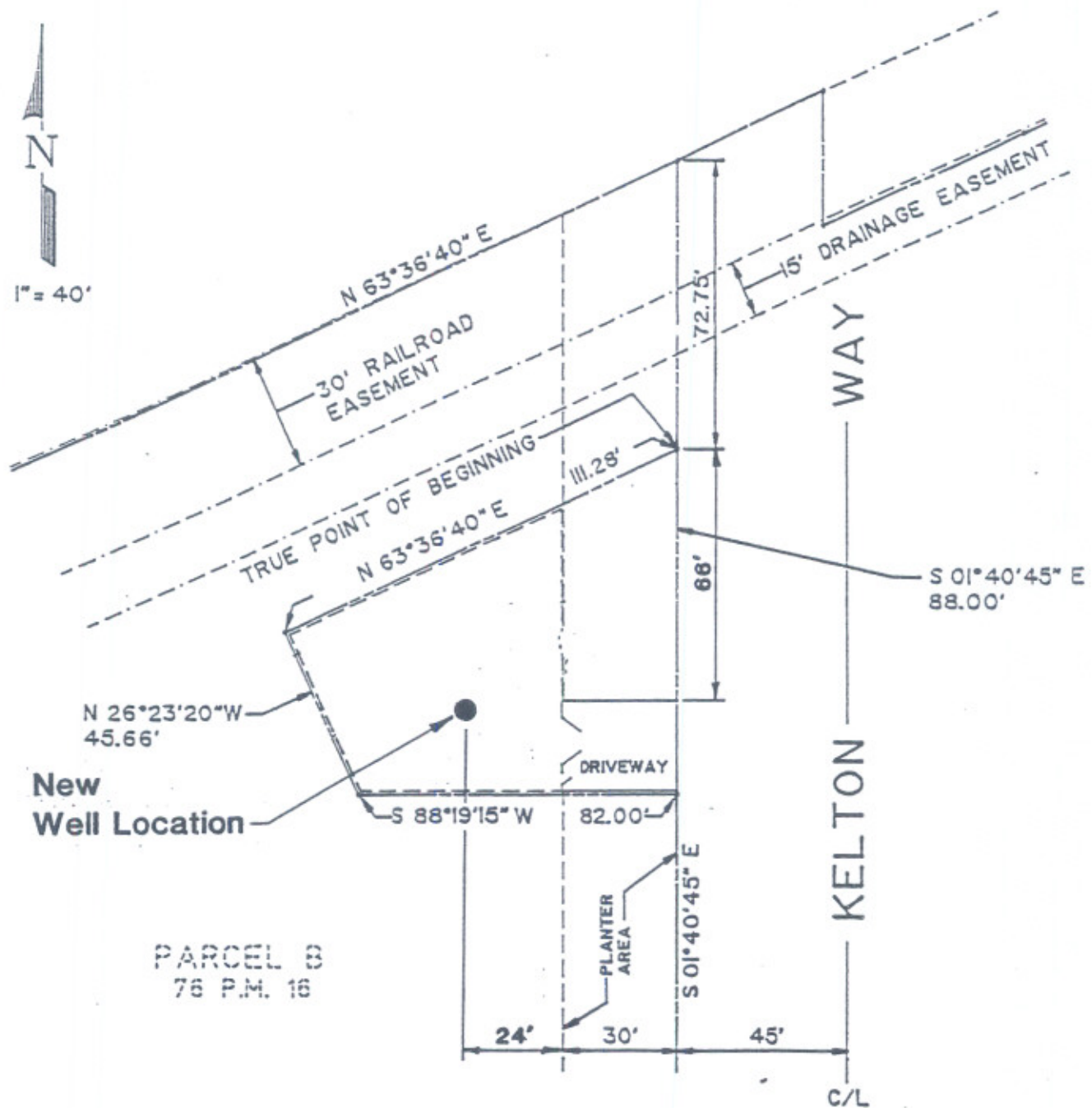


Kennedy/Jenks Consultants  
City of Sacramento

### Location Map

K/J 922505.00  
April 1992

Figure 1

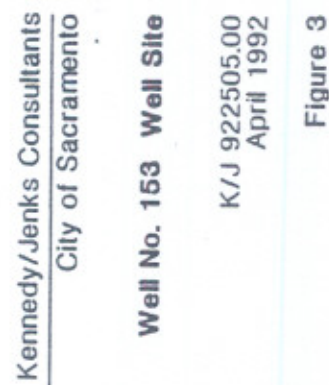


Kennedy/Jenks Consultants  
City of Sacramento

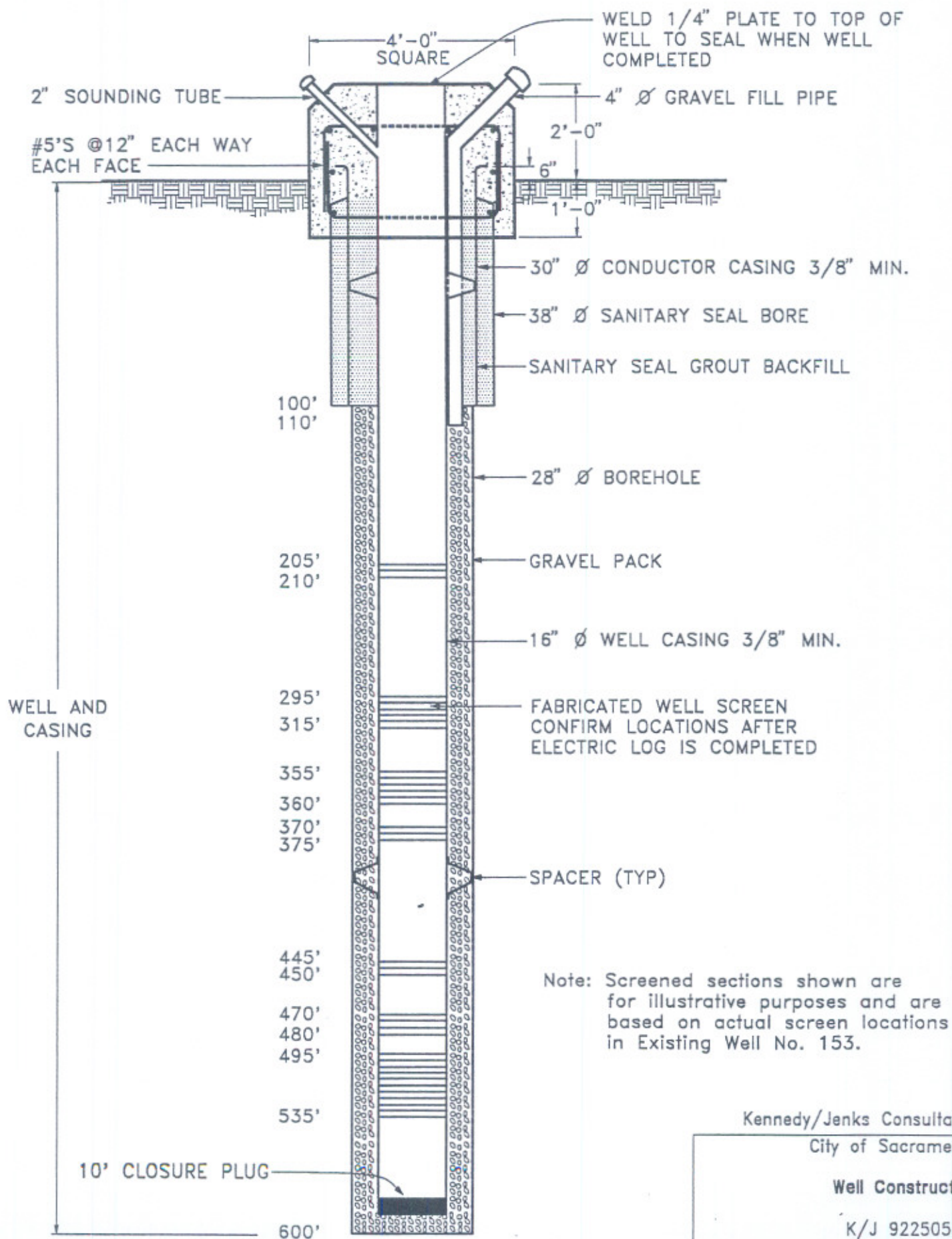
Well 164 Site

K/J 922505.00  
April 1992

Figure 2







Kennedy/Jenks Consultants  
City of Sacramento

Well Construction

K/J 922505.00  
April 1992



## Improvement Plans and Contract Specifications for Elkhorn Reservoir

PROJECT NAME: ZJ36 ELKHORN RESERVOIR  
COVER SHEET

PN: ZJ36

REVISIONS			
NO.	DESCRIPTION	DATE	
▲▲			
▲▲			
▲▲			
▲▲			

BENCH MARK	ELEV. 15.829
DESCRIPTION: BM257-B3B	
SAC COUNTY BM 1A-43 DISK IN	
BRIDGE (E) OF ELKHORN BLVD. &	
NATOMAS BLVD. (S) SIDE OF	
ELKHORN BLVD.	

FIELD BOOK	
1448	
SCALE:	
H: _____	
V: _____	

ON ORIGINAL SCALE  
DRAWING ADJUST  
SCALED DIMENSIONS  
IF THIS DOES NOT  
SCALE AT 1"



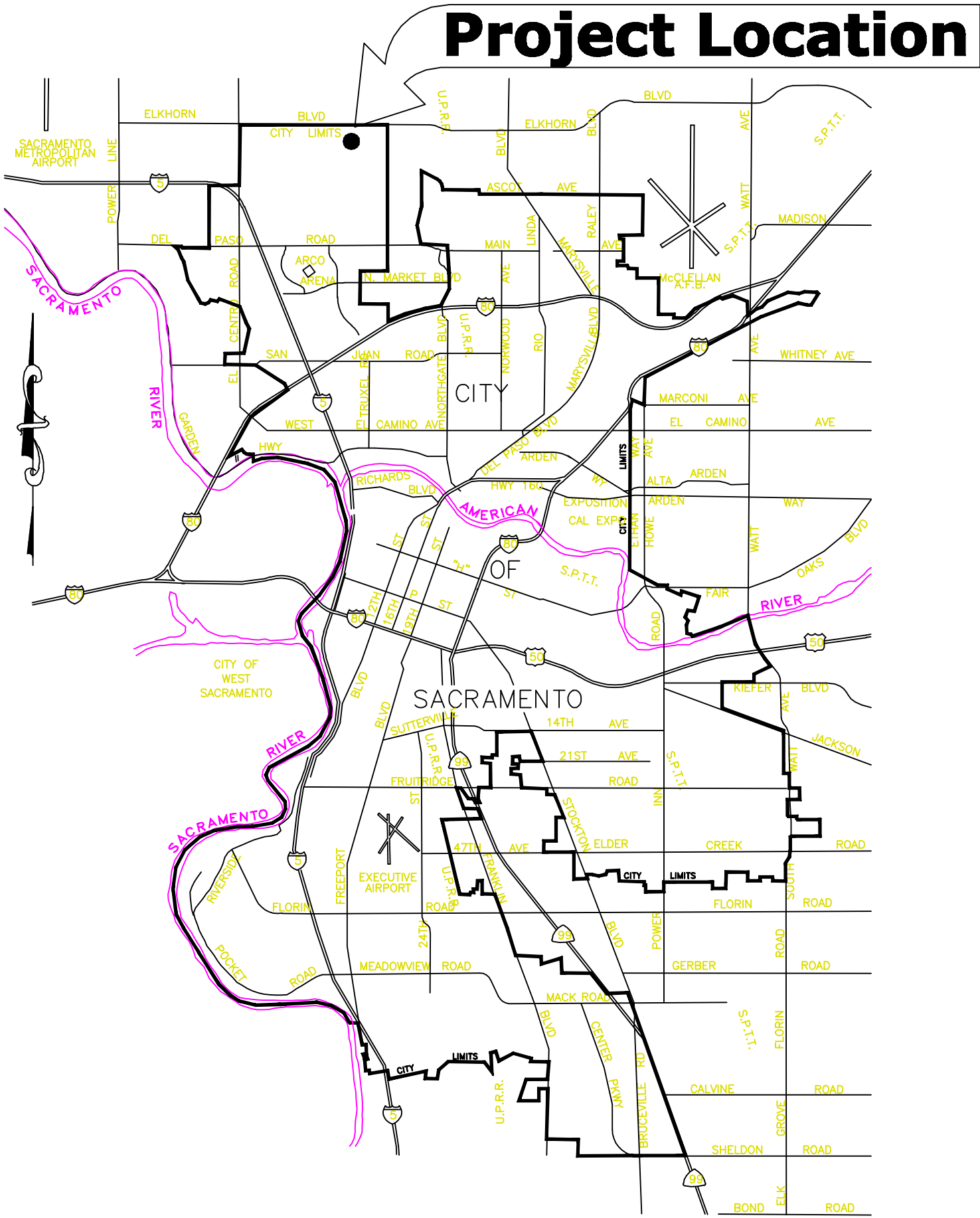
CITY OF SACRAMENTO  
DEPARTMENT OF UTILITIES

DRAWN BY: A. VELAZQUEZ	DESIGNED BY: W. PETERSON	CHECKED BY: D. SHERRY
DATE: 042505	R.C.E. NO. 67006 DATE: 042505	R.C.E. NO. 53638 DATE: 042505

IMPROVEMENT PLANS FOR:  
WATER DISTRIBUTION IMPROVEMENTS  
3 MILLION GALLON ELKHORN RESERVOIR  
COVER SHEET



PLANNING NO.	DWG. NO.
PN: ZJ36	G-1
WATER DWG NO.	SHEET
	1
GIS GRID NO.	OF
J13	54



VICINITY MAP  
NTS

# CITY OF SACRAMENTO

## IMPROVEMENT PLANS FOR

# ELKHORN RESERVOIR

## 3 MILLION GALLONS

SUBMITTED BY:

WARREN PETERSON  
PROJECT MANAGER  
DEPT OF UTILITIES

R.C.E. 67006

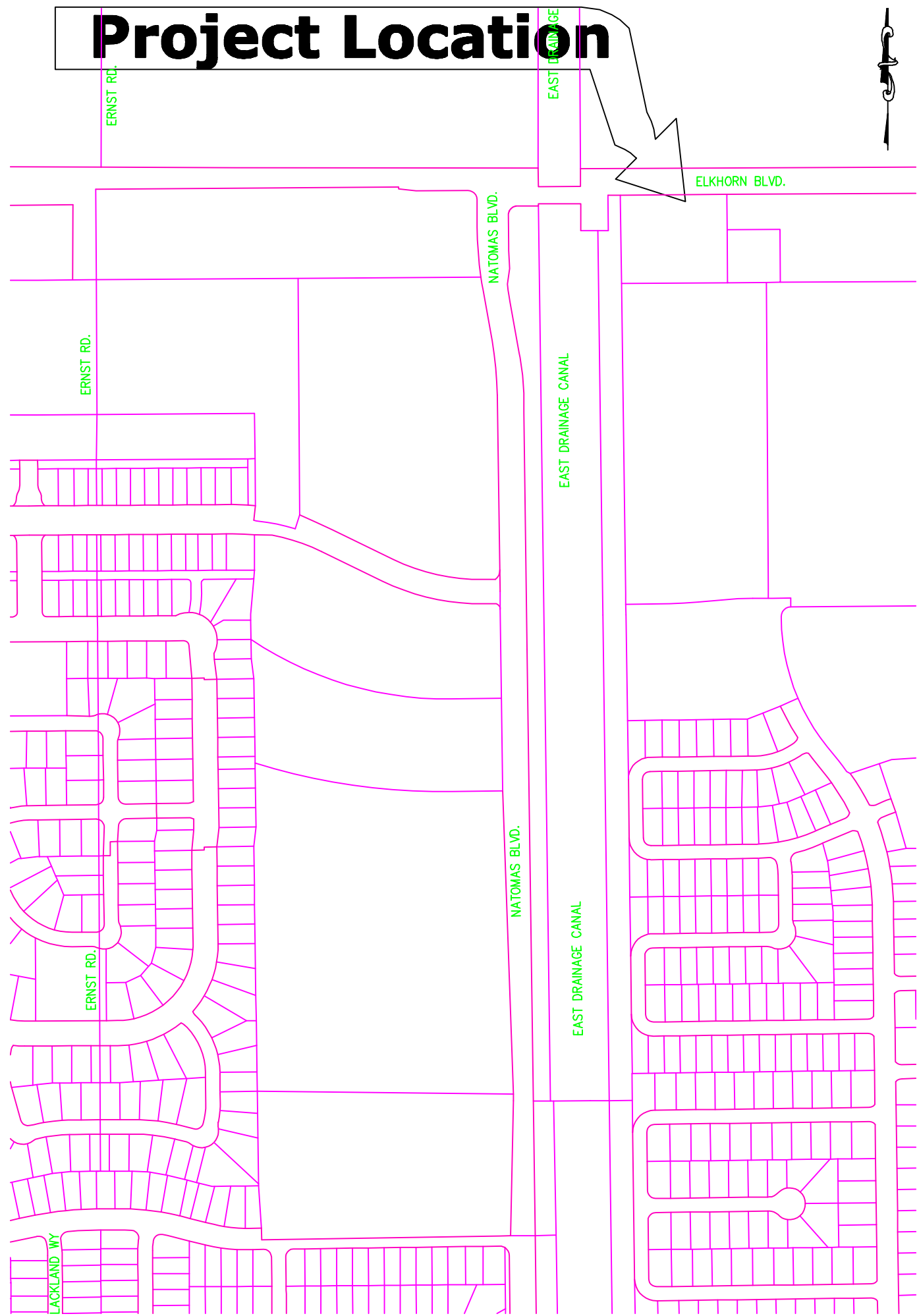
DATE

APPROVED BY:

DAN SHERRY  
SUPERVISING ENGINEER  
DEPARTMENT OF UTILITIES

R.C.E. 53638

DATE



LOCATION MAP  
NTS

### SHEET INDEX

G-1	COVER SHEET	CD-1	CIVIL DETAILS 1	E-4	CONTROL SCHEMATIC DIAGRAM
G-2	GENERAL NOTES AND LEGEND	CD-2	CIVIL DETAILS 2	E-5	CONTROL SCHEMATIC DIAGRAMS
G-3	ABBREVIATIONS AND SYMBOLS			E-6	CONTROL SCHEMATIC DIAGRAMS
C-1	OVERALL SITE PLAN	A-1	RESERVOIR CORNICE DETAILS	E-7	INSTRUMENTATION CONTROL SCHEMATIC DIAGRAM
C-2	SITE PIPING PLAN - BORE AND JACK	L-1	IRRIGATION AND LANDSCAPING PLAN	E-8	DISCRETE I/O INTERCONNECTION DIAGRAM
C-3	SITE PIPING PLAN - SEWER SERVICE			E-9	DISCRETE I/O INTERCONNECTION DIAGRAM
C-4	BOOSTER PUMP PLAN AND PROFILE	S-1	DRAWING INDEX, GENERAL NOTES	E-10	ANALOG I/O INTERCONNECTION DIAGRAM
C-5	BOOSTER PUMP SECTION AND DETAILS	S-2	MAT SLAB/PILES PLAN AND DETAILS	E-11	COMMUNICATION DIAGRAM
C-6	INLET AND OUTLET SECTIONS	S-3	TANK PLANS AND SECTION	E-12	ELECTRICAL SITE PLAN
C-7	OVERFLOW AND FLOOR DRAIN SECTIONS	S-4	TYPICAL WALL SECTION AND DETAILS	E-13	PUMP STATION ELECTRICAL SITE PLAN
C-8	OVERFLOW AND FLOOR DRAIN DETAILS	S-5	PRESTRESSING NOTES AND MISCELLANEOUS DETAILS	E-14	CONTROL VALVE VAULT AND FLOW METER VAULT
C-9	FLOW METER VAULT	S-6	ROOF REINFORCEMENT PLANS AND DETAILS	E-15	CONTROL BUILDING ELECTRICAL PLAN
C-10	CONTROL VALVE VAULT	S-7	MAT SLAB, COLUMN AND DOWNSPOUT DETAILS	E-16	CONTROL BUILDING LIGHTING PLAN
C-11	CONTROL BUILDING	S-8	PIPE ENTRANCE DETAILS	E-17	CABLE AND CONDUIT SCHEDULES
C-12	CONTROL BUILDING DETAILS	S-9	INTERIOR LADDER AND HATCH DETAILS	E-18	LIGHTING PANEL AND FIXTURE SCHEDULES
C-13	CMU WALL LAYOUT	S-10	EXTERIOR LADDER AND ROOF VENT DETAILS		
C-14	CMU WALL DETAILS 1	S-11	HANDRAIL DETAILS	GE-1	INSTALLATION DETAILS
C-15	CMU WALL DETAILS 2	E-1	ELECTRICAL SYMBOLS, ABBREVIATIONS	GE-2	INSTALLATION DETAILS
C-16	CMU WALL DETAILS 3	E-2	SINGLE LINE DIAGRAM		
		E-3	SWITCHGEAR AND MCC ELEVATION DIAGRAM		



## GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF SACRAMENTO STANDARD SPECIFICATIONS DATED JUNE 1989 AND SPECIAL PROVISIONS.
2. TWO WORKING DAYS PRIOR TO PROJECT STAKING, THE CONTRACTOR SHALL SUBMIT TO THE RESIDENT ENGINEER A COMPLETED CONSTRUCTION STAKING REQUEST FORM.
3. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR FURNISHING, INSTALLING AND MAINTAINING ALL WARNING SIGNS AND DEVICES NECESSARY TO SAFEGUARD THE GENERAL PUBLIC AND THE WORK, AND FOR PROVIDING PROPER AND SAFE ROUTING OF THE VEHICULAR AND PEDESTRIAN TRAFFIC DURING THE PERFORMANCE OF THE WORK. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND SHALL NOT BE LIMITED TO WORKING HOURS. THE USE OF FLAGGERS, BARRICADES AND CONSTRUCTION SIGNING SHALL COMPLY WITH THE CURRENT EDITION OF WORK AREA AND TRAFFIC CONTROL HANDBOOK (W.A.T.C.H.).
4. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL EXISTING UTILITIES AND PROTECTING AND REPAIRING DAMAGE TO EXISTING UTILITIES. THE CONTRACTOR SHALL CONTACT UNDERGROUND SERVICE ALERT (1-800-642-2444) TWO WORKING DAYS PRIOR TO WORK COMMENCEMENT.
5. DEMOLITION OF EXISTING FEATURES SHALL BE LIMITED TO THE ITEMS SHOWN ON THE PLANS AND DESCRIBED IN THE SPECIAL PROVISIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE ALL EXISTING FEATURES DAMAGED BY HIS OPERATIONS, AT HIS EXPENSE.
6. AT THE TIME THE CONTRACT IS AWARDED, THE CONTRACTOR SHALL POSSESS A VALID CLASS A LICENSE, OR A COMBINATION OF CLASSES REQUIRED BY THE CATEGORIES AND CLASSES OF WORK INCLUDED IN THIS CONTRACT.
7. THE CONTRACTOR SHALL OBTAIN A PERMIT FROM THE DIVISION OF OCCUPATIONAL SAFETY & HEALTH (2424 ARDEN WAY SUITE 165, SACRAMENTO, CA PHONE 263-2800) PRIOR TO ANY TRENCHING EXCAVATION 5 FEET OR MORE IN DEPTH. A COPY OF THIS PERMIT SHALL BE AVAILABLE AT THE CONSTRUCTION SITE AT ALL TIMES.
8. ALL THE GRADING AND EXCAVATION SHALL COMPLY WITH THE RECOMMENDATIONS OF THE SOIL AND GEOLOGICAL INVESTIGATION PREPARED BY KLEINFELDER AND THE PROJECT SPECIFICATIONS.
9. PRIOR TO SUBMITTAL OF PIPE SHOP DRAWINGS, THE CONTRACTOR SHALL VERIFY THE INVERT ELEVATION, OUTSIDE DIAMETER, LOCATION, BOLT HOLE ORIENTATION, AND MATERIAL OF ALL EXISTING PIPELINES TO WHICH NEW PIPELINES WILL BE CONNECTED.
10. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING SURFACE FEATURES AND REPORT ANY DISCREPANCIES TO THE ENGINEER.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING SURVEY MONUMENTS OR MARKERS DURING CONSTRUCTION. THE CONTRACTOR SHALL RESTORE ALL SURVEY MONUMENTS THAT ARE DAMAGED OR DESTROYED.
12. MAINTENANCE HOLE OR STRUCTURE ENTRY SHALL BE DONE IN COMPLIANCE WITH THE CONFINED SPACE ENTRY REQUIREMENTS OF CAL-OSHA AND THE CITY OF SACRAMENTO, WHICHEVER IS MORE RIGOROUS.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LINE AND GRADE OF ALL PIPING AND CONDUIT WITHIN THE PROJECT SITE CONSTRAINTS.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING RECORD DRAWINGS FOR ALL UNDERGROUND WORK THROUGHOUT THE COURSE OF CONSTRUCTION. SUCH DRAWINGS SHALL RECORD THE LOCATION AND GRADE (CITY DATUM) OF ALL UNDERGROUND IMPROVEMENTS AND SHALL BE DELIVERED TO THE CITY PRIOR TO CONSIDERATION OF THE ACCEPTANCE OF WORK.
15. PIPE AND MAINTENANCE HOLE DIMENSIONS ARE TO THE CENTERLINE UNLESS OTHERWISE NOTED.
16. ALL TAPS 12" AND SMALLER INTO THE SEWER AND DRAIN MAINTENANCE HOLES SHALL BE CORE BORED WITH CORE-N-SEAL TAPS OR APPROVED EQUAL.
17. CONSTRUCTION DEWATERING ACTIVITIES SHALL STRICTLY CONFORM TO THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS.
18. SEWER ELEVATIONS SHOWN ARE TO INVERT (FLOWLINE) OF CONDUIT.
19. THE CONTRACTOR SHALL ADJUST ALL MAINTENANCE HOLES GRADE RINGS, VALVE BOXES AND PULLBOXES TO FINISH GRADE UNLESS OTHERWISE SHOWN.
20. ALL TRENCHING AND BACKFILL SHALL BE DONE IN ACCORDANCE WITH DETAILS AND THE PROJECT SPECIFICATIONS.
21. LOCATIONS OF ELECTRICAL MAINTENANCE HOLES & PULLBOXES ARE APPROXIMATE. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ELECTRICAL MAINTENANCE HOLES AND PULLBOXES IN THE FIELD WITH THE ENGINEER.
22. PRIOR TO CONNECTION TO ANY EXISTING UTILITY, THE CONTRACTOR SHALL COORDINATE WITH THE OWNER AND/OR WITH THE AFFECTED AGENCY.
23. CONTRACTOR SHALL PROVIDE TWO FLEXIBLE CONNECTIONS FOR EACH PIPE PENETRATING A STRUCTURE WHETHER SHOWN ON THE DRAWINGS OR NOT. THE CONNECTIONS SHALL BE 3' AND 8' AWAY FROM THE STRUCTURE UNLESS SHOWN OTHERWISE. A DETAIL OF THE FLEXIBLE CONNECTIONS AND THE RESTRAINT SYSTEM (REQUIRED ON PRESSURE SYSTEMS) SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. A RESTRAINT SYSTEM FOR ALL JOINTS INSTALLED AT CHANGES IN DIRECTION SHALL BE PROVIDED FOR ALL PRESSURE PIPELINES, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
24. ALL WATER TAPS, TIE-INS, AND SHUT DOWNS ARE TO BE SCHEDULED DIRECTLY WITH THE ENGINEER BY THE CONTRACTOR. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE ENGINEER TO SCHEDULE AND COORDINATE SUCH WORK.
25. WITHOUT EXCEPTION, ALL OPENING AND CLOSING OF VALVES ON EXISTING WATER MAINS SHALL BE EXECUTED BY UTILITIES DEPARTMENT CREWS ONLY.

## SURVEY CONTROL



SITE TOPOGRAPHY AND STRUCTURE ELEVATIONS SHOWN ON DRAWINGS ARE BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29) AS REFERENCED BY AVAILABLE CITY OF SACRAMENTO PUBLISHED BENCHMARKS.

## TEMPORARY BENCHMARK DATA

TBM	DESCRIPTION	NORTHING	EASTING
A	SET SPIKE & WHISKER	2011706.813	6702412.440
B	SET SPIKE & WHISKER	2011708.791	6702714.058
C	SET SPIKE & WHISKER	2011608.765	6702714.692
D	SET SPIKE & WHISKER		
E	SET SPIKE & WHISKER	2011458.784	6702715.662
F	SET SPIKE & WHISKER	2011456.862	6702415.651
G	BRIDGE CROSS DR.	2010564.520	6702831.417
H	FND PK NAILS	2010564.992	6702894.817

LEGEND	EXISTING	PROPOSED
DRAIN INLET		
MAINTENANCE HOLE		
SANITARY SEWER W/CLEAN-OUT		
STORM DRAIN		
SEWER SERVICE		
WATER MAIN		
WATER MAIN W/BLOW-OFF		
WATER MAIN W/AIR RELEASE VALVE		
WATER MAIN W/GATE VALVE		
WATER MAIN W/BUTTERFLY VALVE		
WATER MAIN ABANDONED		
STANDARD FIRE HYDRANT		
WHARF FIRE HYDRANT		
WATER SERVICE & METER BOX		
WATER SERVICE & CURB STOP		
BACKFLOW PREVENTER		
CURB, GUTTER & SIDEWALK		
CENTER LINE		
RIGHT-OF-WAY		
GAS MAIN & GAS VALVE		
GAS METER		
ELECTRICAL CONDUIT		
POWER POLE W/GUY WIRE		
ELECTRICAL CABINET OR PEDESTAL		
TELEPHONE CONDUIT		
CABLE BOX/POD		
STREET LIGHT		
FIRE ALARM		
ELEVATION		
FENCE		
POINT OF INTERSECTION OR NAIL		
SIGN		
BOLLARD GATE POST OR POST		
MAIL BOX		
ADDRESS		
HANDICAP RAMP		
TREE		
DRIVEWAY		
CONCRETE PLUG		
CUT LINE		



PN: ZJ36	REVISIONS				BENCH MARK		ELEV. 15.829	FIELD BOOK 1448			CITY OF SACRAMENTO			
					DESCRIPTION: BM257-B3B						DEPARTMENT OF UTILITIES			
	NO.	DESCRIPTION	DATE	BY	SAC COUNTY BM 1A-43 DISK IN						DRAWN BY: A. VELAZQUEZ			
					BRIDGE (E) OF ELKHORN BLVD. &						DESIGNED BY: M. PETERSON			
					NATOMANS BLVD. (S) SIDE OF						CHECKED BY: D. SHERRY			
					ELKHORN BLVD.						DATE: 042505			
								H:	ON ORIGINAL SCALE	R.G.E. NO. 67006 DATE: 042505				
								V:	DRAWING ADJUST	R.G.E. NO. 53638 DATE: 042505				
									SCALED DIMENSIONS					
									IF THIS DOES NOT					
									SCALE AT 1"					

# IMPROVEMENT PLANS FOR: WATER DISTRIBUTION IMPROVEMENTS 3 MILLION GALLON ELKHORN RESERVOIR GENERAL NOTES AND LEGEND

PLANNING NO.	DWG. NO. <b>G-2</b>
PN: <b>ZJ36</b>	SHEET <b>2</b>
WATER DWG NO.	OF <b>54</b>
GIS GRID NO. 113	

PROJECT NAME: ZJ36 ELKHORN RESERVOIR  
CAD FILE: R:\SDSKPROJ\ZJ36 ELKHORN RESERVOIR\dwg\



PROJECT NAME: ZJB6 ELKHORN RESERVOIR  
CAD FILE: R:\SDSKPROJ\ZJB6 ELKHORN RESERVOIR.dwg

PN: ZJ36

ABBREVIATIONS

AB	AGGREGATE BASE	FXL&C	FUSION EPOXY LINED & COATED
AB	ANCHOR BOLT	FLG	FLANGE
ABT	ABOUT	FLEX	FLEXIBLE
AC	ASPHALTIC CONCRETE	FOC	FACE OF CONCRETE
ADPTR	ADAPTER	FT	FEET OR FOOT
AGGR	AGGREGATE	FTG	FITTING
AHD	AHEAD	FTG	FOOTING
AFF	ABOVE FINISHED FLOOR	GA	GAUGE
AL	ALUMINUM	GAF	GALVANIZED AFTER FABRICATION
ALTN	ALTERNATE	GAL	GALLON
APPROX	APPROXIMATE	GALV	GALVANIZED
ARR	ARRANGEMENT	GB	GRADE BREAK
ASSY	ASSEMBLY	GND	GROUND
AW	AUXILIARY WATER	GPM	GALLONS PER MINUTE
BC	BARE COPPER	GR	GRADE
BC	BOLT CIRCLE	GRTG	GRATING
BTWN	BETWEEN	GRVD	GROOVED
BF	BLIND FLANGE	GS	GALVANIZED STEEL
BLDG	BUILDING	HB	HOSE BIBB
BLK	BLOCK	HDR	HEADER
BM	BEAM	HGR	HANGER
BOT	BOTTOM	HGT	HEIGHT
CAP	CAPACITY	HORIZ	HORIZONTAL
CFS	CUBIC FEET PER SECOND	HP	HORSEPOWER
CI	CAST IRON	HR	HANDRAIL
CIRC	CIRCULATOR	HMAC	HOT MIX ASPHALT CONCRETE
CJ	CONSTRUCTION JOINT	HVAC	HEATING, VENTILATION, A.C.
CL	CENTER LINE	HWL	HIGHWAY LEVEL
CL	CLEAR	HYD	HYDRANT
CLS	CLASS	HYDR	HYDRAULIC
CML&C	CEMENT MORTAR LINED & COATED	ID	INSIDE DIAMETER
CMP	CORROGATED METAL PIPE	IE	INVERT ELEVATION
CMPNT	COMPONENT	IN	INCHES
CND	CONDUIT	INSTL	INSTALLATION
COL	COLUMN	INSTM	INSTRUMENTATION
COMP	COMPLETE	INT	INTERIOR
CONC	CONCRETE	INV	INVERT
CONN	CONNECTION	IOD	IRREVOCABLE OFFER OF DEDICATION
CONSTR	CONSTRUCTION	IPS	IRON PIPE SIZE
CONT	CONTINUOUS	JT	JOINT
CONT	CONTROL	LB	POUND
COR	CORNER	LG	LONG
CORP	CORPORATION	LLV	LONG LEG VERTICAL
CP	CATHODIC PROTECTION	LT	LEFT
CPLG	COUPLING	LSH	LEVEL SWITCH HIGH
CS	CAUSTIC SOLUTION	LSL	LEVEL SWITCH LOW
CTG	COATING	LWL	LOW WATER LEVEL
CTR	CENTER	M	MILLIGRAM
CYL	CYLINDER	MACH	MACHINE
DBL	DOUBLE	MATL	MATERIAL
DET	DETAIL	MAX	MAXIMUM
DIA	DIAMETER	MB	MACHINE BOLT
DIAG	DIAGONAL	MCC	MOTOR CONTROL CENTER
DIM	DIMENSION	MECH	MECHANICAL
DISCH	DISCHARGE	MFR	MANUFACTURER
DN	DOWN	MGD	MILLION GALLONS PER DAY
DR	DRAIN	MH	MANHOLE
DWG	DRAWING	MI	MALLEABLE IRON
DWL	DOWEL	ML	MATCH LINE
EA	EACH	MIN	MINIMUM
ECC	ECCENTRIC	MIPT	MALE IRON PIPE THREAD
EF	EACH FACE	NIC	NOT IN CONTRACT
EL & ELEV	ELEVATION	NO	NUMBER
ELB	ELBOW	NOM	NOMINAL
ELEC	ELECTRIC	NPT	NATIONAL PIPE THREAD
ENC	ENCASEMENT	NTS	NOT TO SCALE
EP	EDGE OF PAVEMENT	OC	ON CENTER
EQPT	EQUIPMENT	OD	OUTSIDE DIAMETER
EW	EACH WAY	OPNG	OPENING
EXST	EXISTING	OPP	OPPOSITE
EXP	EXPANSION	P&ID	PROCESS & INSTRUMENTATION DIAGRAM
EXT	EXTENSION	PCC	PORTLAND CEMENT CONCRETE
EXT	EXTERIOR	PD	PERFORATED DRAIN
FAB	FABRICATE	PE	PLAIN END
FC	FLEXIBLE COUPLING	PE	POLYELECTROLYTE
FCA	FLANGED COUPLING ADAPTER	PEN	PENETRATE
FD	FLOOR DRAIN	PEN	PENETRATION
FDN	FOUNDATION	PL	PLATE
FDR	FEEDER	PRV	PRESSURE REDUCING VALVE
FF	FINISHED FLOOR	PSI	POUNDS PER SQUARE INCH
FFE	FINISHED FLOOR ELEV.	PT	POINT
FG	FINISHED GRADE	PUE	PUBLIC UTILITY EASEMENT
FIG	FIGURE	PVC	POLYVINYL CHLORIDE
FNSH	FINISH	PWR	POWER
FLR	FLOOR	R	RADIUS
FL	FLOW LINE	RCP	REINFORCED CONCRETE PIPE

FITTING SYMBOLS

SYMBOL	TYPE
	WELDED JOINT
	GROOVED END JOINT
	FLANGED JOINT
	MECHANICAL JOINT
	BELL & SPIGOT JOINT
	HUB & SPIGOT JOINT (RUBBER GASKET)
	FLANGED COUPLING ADAPTER
	GROOVED END ADAPTER FLANGE
	FLEXIBLE COUPLING
	FLEXIBLE COUPLING WITH THRUST TIES
	STEEL BELLOWS XP JOINT
	ELASTOMER BELLOWS XP JOINT
	ELBOW UP (TOWARD VIEWER)
	ELBOW DOWN (AWAY FROM VIEWER)
	TEE SIDE
	TEE UP (TOWARD VIEWER)
	TEE DOWN (AWAY FROM VIEWER)
	LATERAL UP (TOWARD VIEWER)
	LATERAL DOWN (AWAY FROM VIEWER)
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	UNION

VALVE SYMBOLS

SYMBOL	TYPE	ABBREVIATION
	BUTTERFLY	BFV
	GATE	GV
	KNIFE GATE	KGV
	SWING CHECK	SCV CV
	BALL	BLV
	VEE-BALL	VLV
	GLOBE	GLV
	DIAPHRAGM	DV
	PLUG OR COCK	PV
	ECCENTRIC PLUG	EPV
	LUBRICATED PLUG	LPV
	NEEDLE VALVE	NV
	PINCH VALVE	PNV
	BALL CHECK	BCV
	MOTOR OPERATED BUTTERFLY	MOBV
	SOLENOID CONTROL	SOV
	FLOW CONTROL	FCV
	PRESSURE REDUCING	PRV
	ALTITUDE	AV
	DOUBLE LEAF CHECK	DLCV
	IN-LINE PRESSURE RELIEF	PRFV
	ANGLE BACKPRESSURE	BPV
	ANGLE BACKPRESSURE RELIEF	PRFV



PN: ZJ36	REVISIONS			BENCH MARK	FIELD BOOK	1"		CITY OF SACRAMENTO DEPARTMENT OF UTILITIES	IMPROVEMENT PLANS FOR:			PLANNING NO.	DWG. NO.	
	NO.	DESCRIPTION	DATE	BY	DESCRIPTION: BM257-B36				1448	WATER DISTRIBUTION IMPROVEMENTS			PN: ZJ36	G-3
					SAC COUNTY BM 1A-43 DISK IN				SCALE:	3 MILLION GALLON ELKHORN RESERVOIR			WATER DWG NO.	3
					BRIDGE (E) OF ELKHORN BLVD. &				ON ORIGINAL SCALE	ABBREVIATIONS AND SYMBOLS			GIS GRID NO.	54

DRAWN BY: A. VELAZQUEZ  
DATE: 042505

DESIGNED BY: M. PETERSON  
R.C.E. NO. 61006, DATE: 042505

CHECKED BY: D. SHERRY  
R.C.E. NO. 53638, DATE: 042505



PROJECT NAME: 3,000 ELKHORN RESERVOIR WATER-PLAN  
CAD FILE: R:\SDSKPROJ\JZ36 ELKHORN RESERVOIR WATER-PLAN

PN: ZJ36

(E) E

14

10

5

0

-5

-10

-17

-20

19.5

19.6

19.5

11.9

12.7

15.4

16.9

9.4

5.4

7.1

16.2

17.6

17.3

12.2

14.7

15.1

24" MAIN

FUTURE 108" SEWER

90° ELBOW

36" CASING

2" AIR + VACCUUM  
AIR-RELEASE VALVE

24" BV

CITY E

5'-0"

-1+00

1+00

2+00

3+00

4+00

5+00

10

0

-10

-20

BENCH MARK  
DESCRIPTION: BM257-B3B  
SAC COUNTY BM 1A-43 DISK IN  
BRIDGE (E) OF ELKHORN BLVD. &  
NATOMAS BLVD. (S) SIDE OF  
ELKHORN BLVD.

FIELD BOOK  
1448  
SCALE:  
H: 1"=40'  
V: ON ORIGINAL SCALE  
DRAWING ADJUST  
SCALED DIMENSIONS  
IF THIS DOES NOT  
SCALE AT 1"

CITY OF SACRAMENTO  
DEPARTMENT OF UTILITIES  
DRAWN BY: A. VELAZQUEZ  
DATE: 042505

DESIGNED BY: M. PETERSON  
R.C.E. NO. 67006 DATE: 042505

CHECKED BY: D. SHERRY  
R.C.E. NO. 53638 DATE: 042505

IMPROVEMENT PLANS FOR:  
WATER DISTRIBUTION IMPROVEMENTS  
3 MILLION GALLON ELKHORN RESERVOIR  
SITE PIPING - BORE AND JACK

PLANNING NO. DWG. NO.  
PN: ZJ36 C-2  
WATER DWG NO. SHEET  
615 GRID NO. 5  
J13 OF  
54



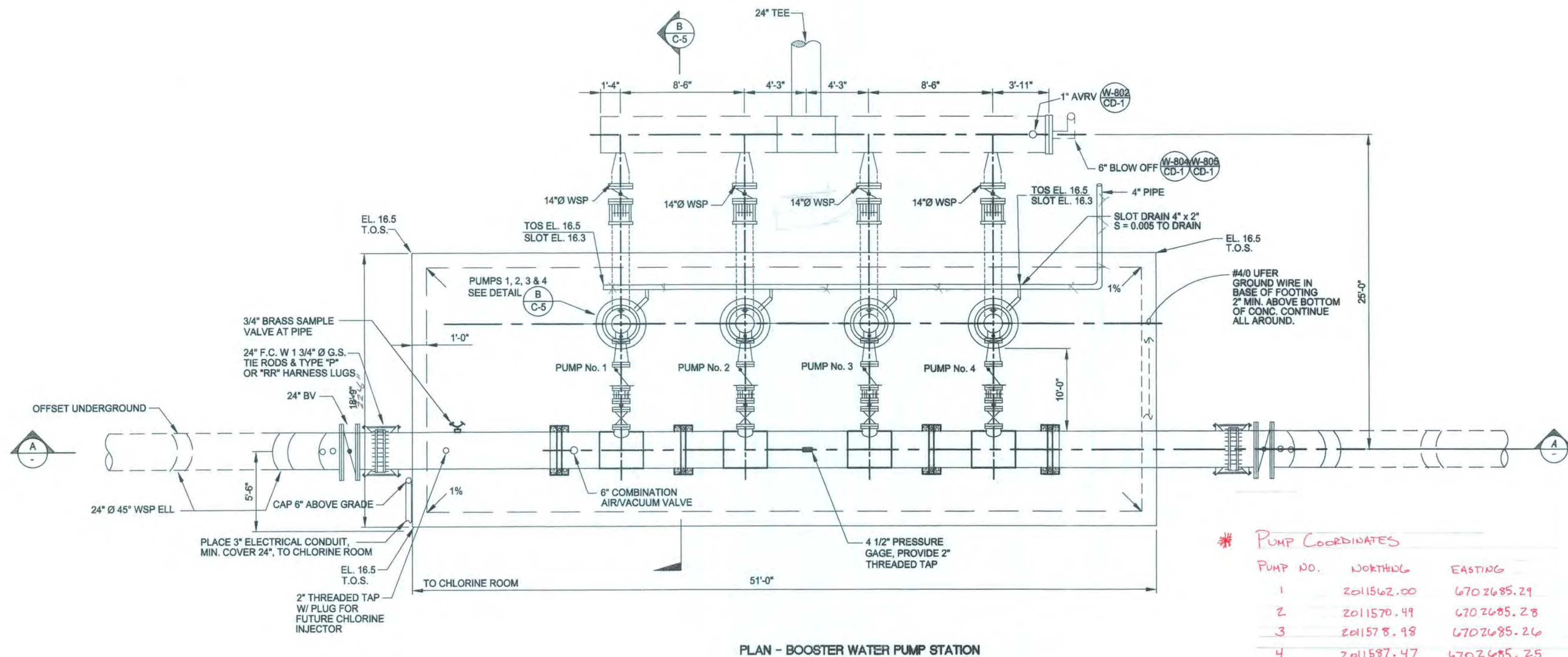












PLAN - BOOSTER WATER PUMP STATION

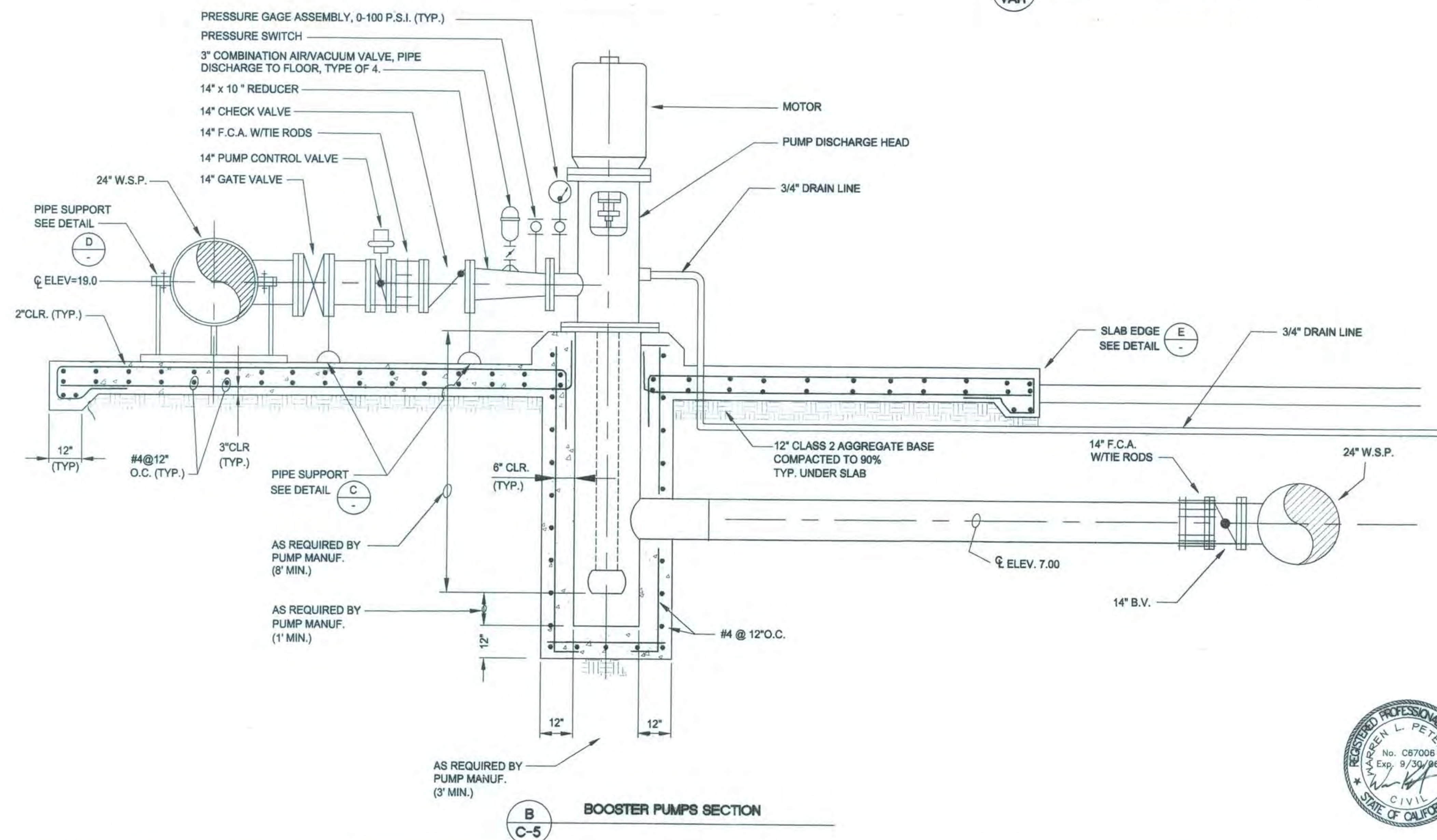
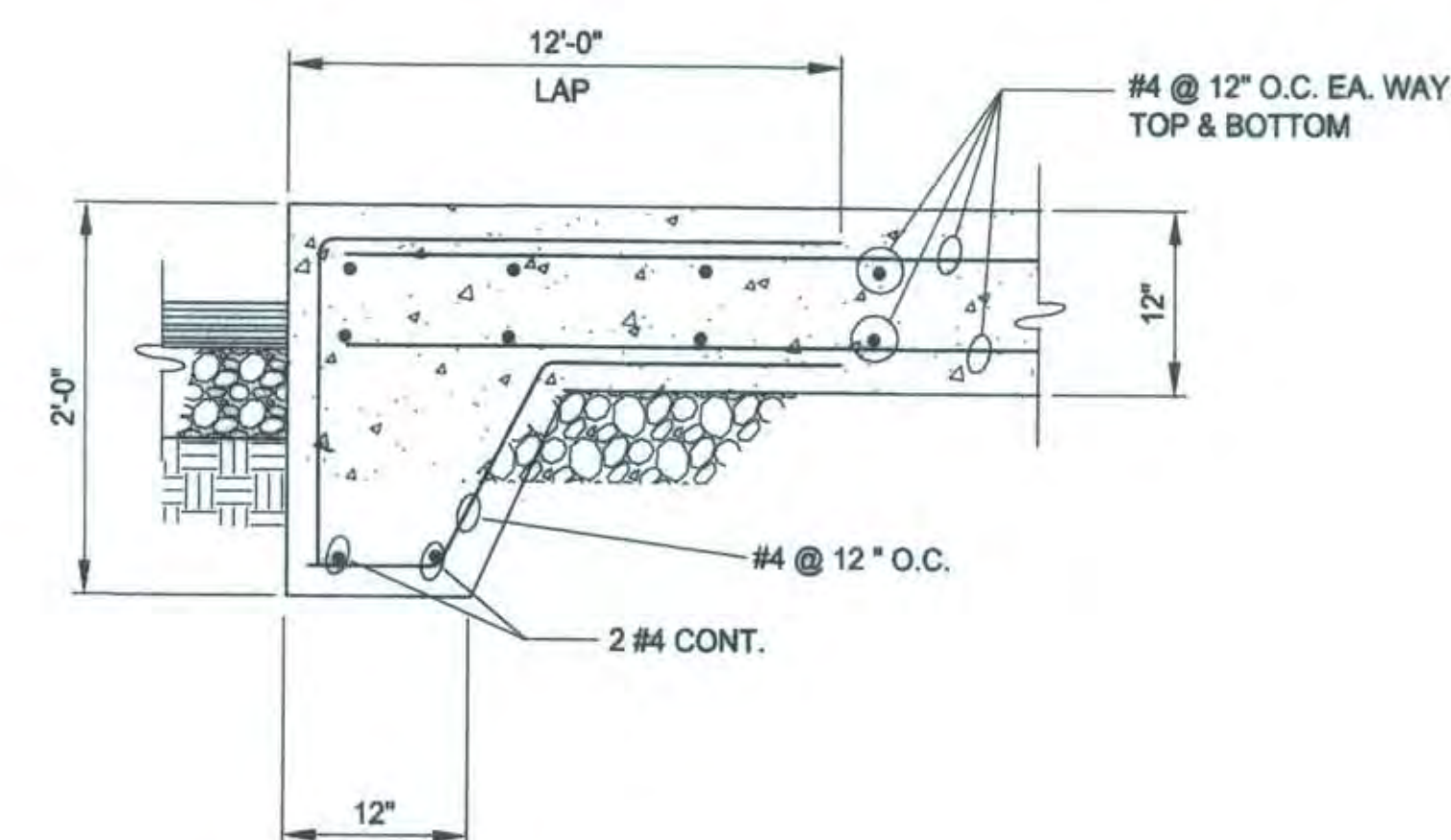
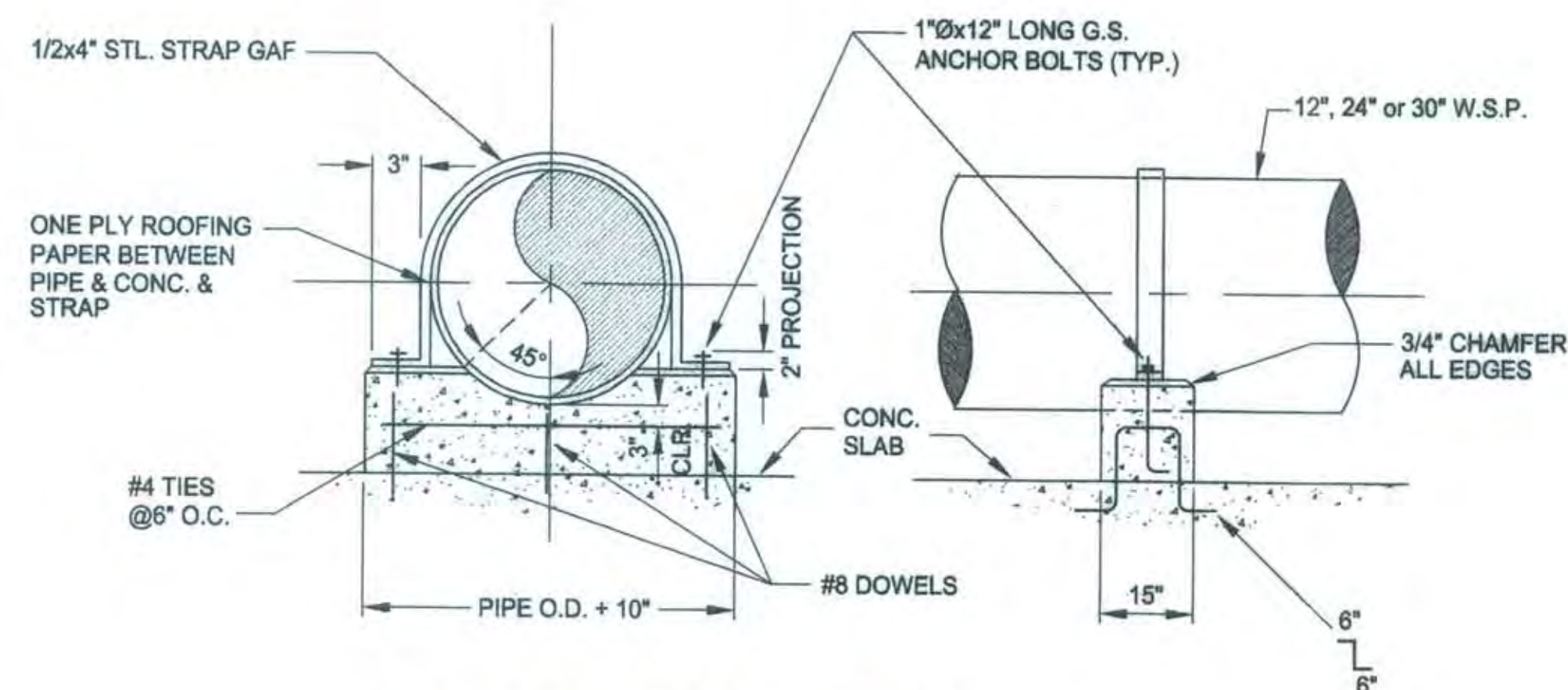
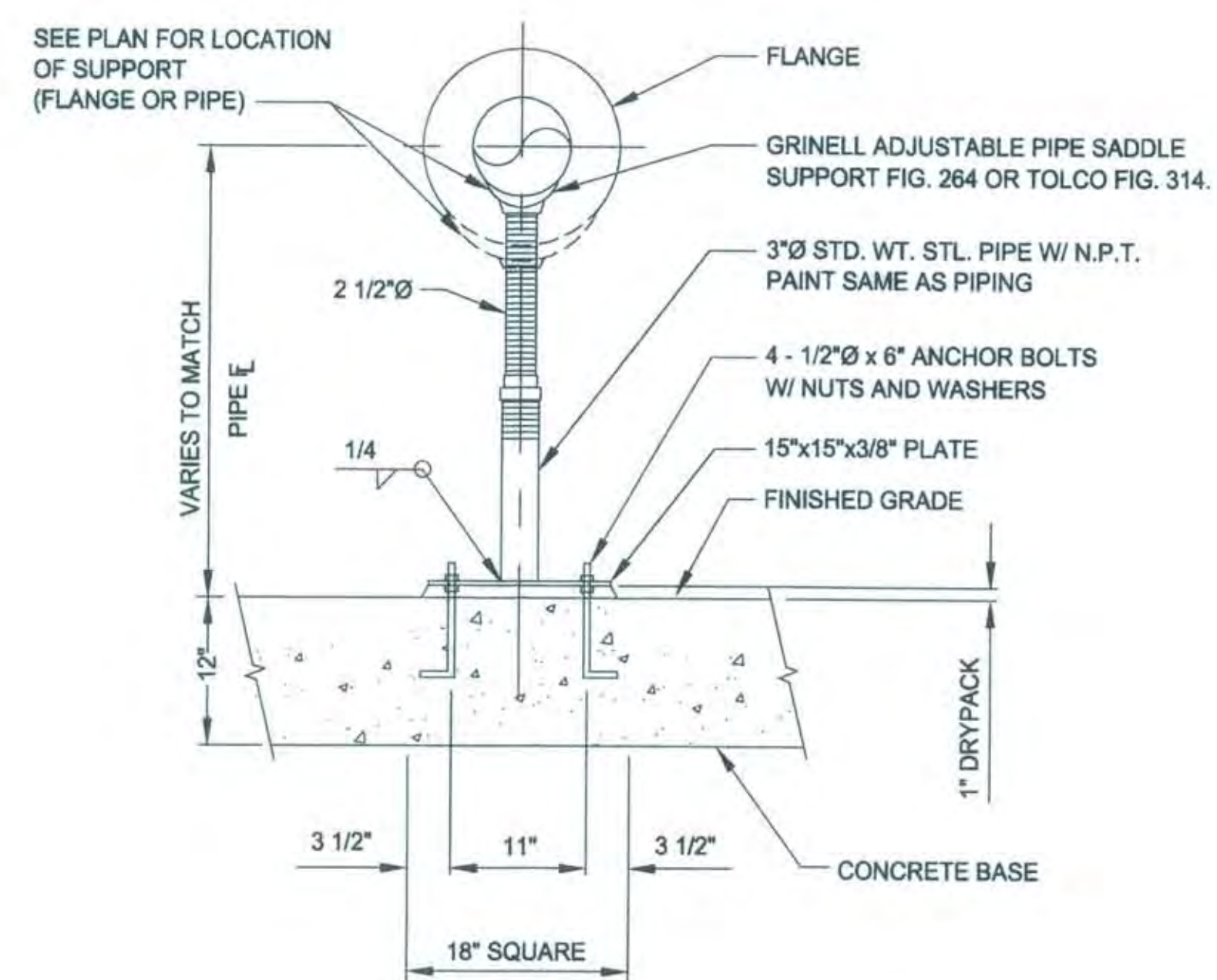
### PUMP COORDINATES

PUMP NO.	NORTHING	EASTING
1	2011562.00	6702685.29
2	2011570.49	6702685.28
3	2011578.98	6702685.26
4	2011587.47	6702685.25



PN: ZJ36	REVISIONS				BENCH MARK ELEV. 15.829 DESCRIPTION: BM257-B3B SAC COUNTY BM 1A-43 DISK IN BRIDGE (E) OF ELKHORN BLVD. & NATOMAS BLVD. (S) SIDE OF ELKHORN BLVD.	FIELD BOOK 1448  SCALE: H. 1/4"=1'-0" V. _____  ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"			CITY OF SACRAMENTO DEPARTMENT OF UTILITIES				IMPROVEMENT PLANS FOR:  WATER DISTRIBUTION IMPROVEMENTS 3 MILLION GALLON ELKHORN RESERVOIR BOOSTER PUMP				PLANNING NO.	DWS. NO.
	No.	DESCRIPTION	DATE	BY					PN: ZJ36	SHEET								
									WATER DWS NO.	7								
									GIS GRID NO.	OF								
									J13	54								





PROJECT NAME: ZJ36 ELKHORN RESERVOIR  
CAD FILE: R:\5DSKPROJ\ZJ36 ELKHORN RESERVOIR\dwg\

[illegible]

BENCH MARK ELEV. 15.829  
DESCRIPTION: BM257-B3B  
SAC COUNTY BM 1A-43 DISK IN  
BRIDGE (E) OF ELKHORN BLVD. &  
NATOMAS BLVD. (S) SIDE OF  
ELKHORN BLVD.

FIELD BOOK	1"
1448	
SCALE:	ON ORIGINAL SCALE
H: _____	DRAWING ADJUST
V: _____	SCALED DIMENSIONS
	IF THIS DOES NOT
	SOMEWHAT 1"

 <h1 style="text-align: center;">CITY OF SACRAMENTO</h1> <h2 style="text-align: center;">DEPARTMENT OF UTILITIES</h2>		
DRAWN BY: <u>A. VELAZQUEZ</u> DATE: <u>042505</u>	DESIGNED BY: <u>W. PETERSON</u> R.C.E. NO. <u>67006</u> DATE: <u>042505</u>	CHECKED BY: <u>D. SHERRY</u> R.C.E. NO. <u>53638</u> DATE: <u>042505</u>

IMPROVEMENT PLANS FOR:  
**WATER DISTRIBUTION IMPROVEMENTS  
 3 MILLION GALLON ELKHORN RESERVOIR  
 BOOSTER PUMP SECTION & DETAILS**

PLANNING NO.	DWG. NO.
PN: ZJ36	C-5
WATER DWG NO.	SHEET
	8
	OF
GIS GRID NO.	



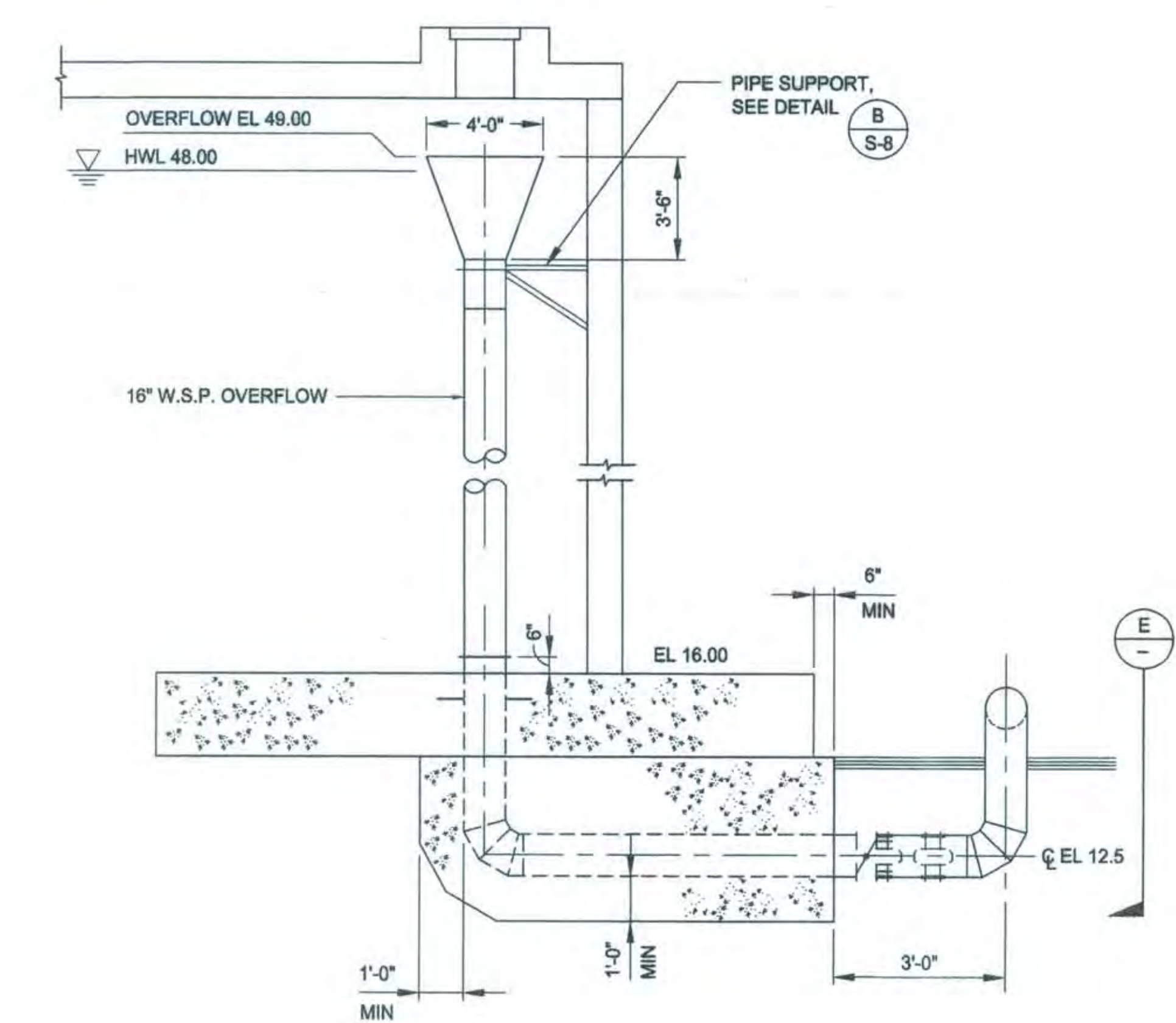
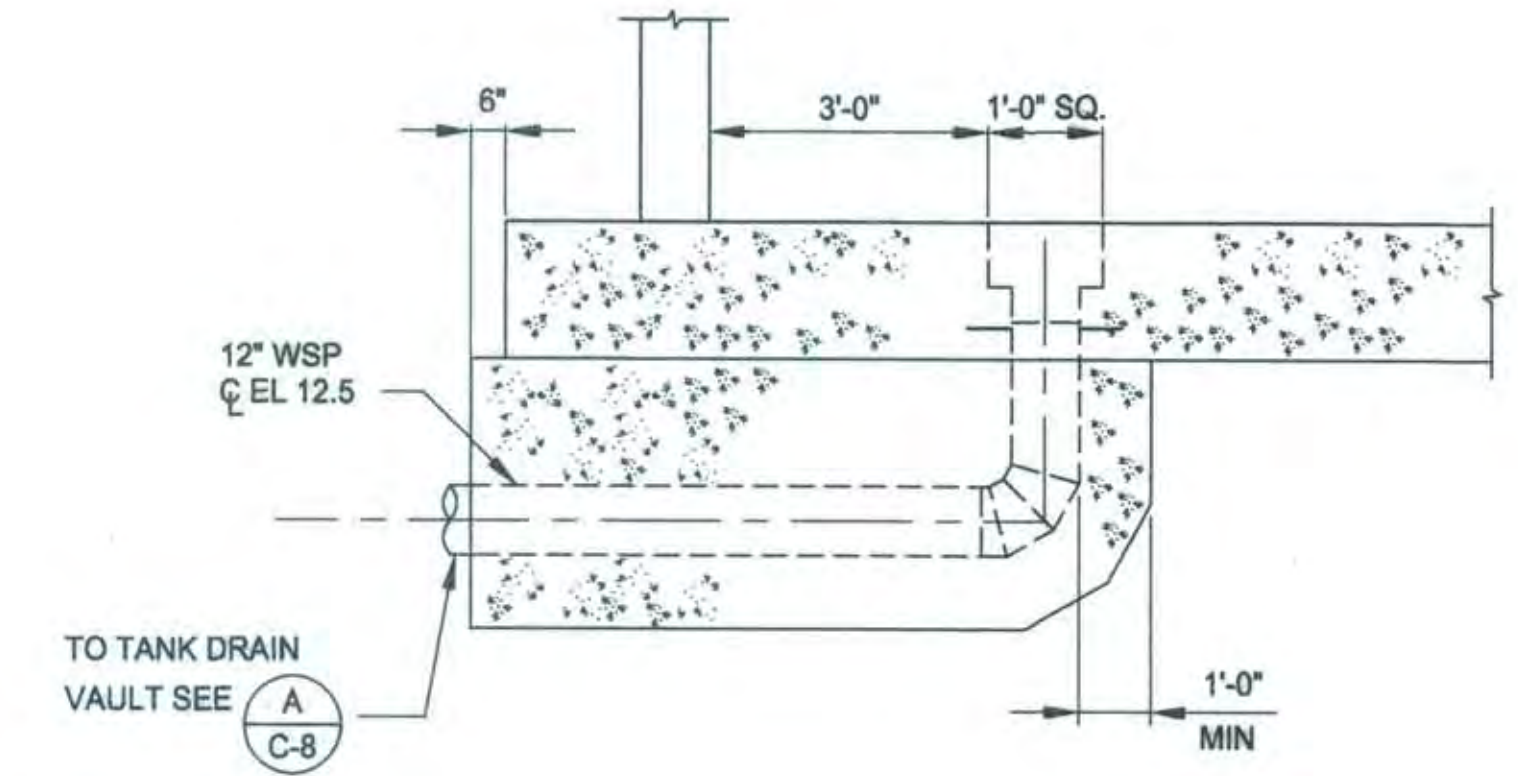
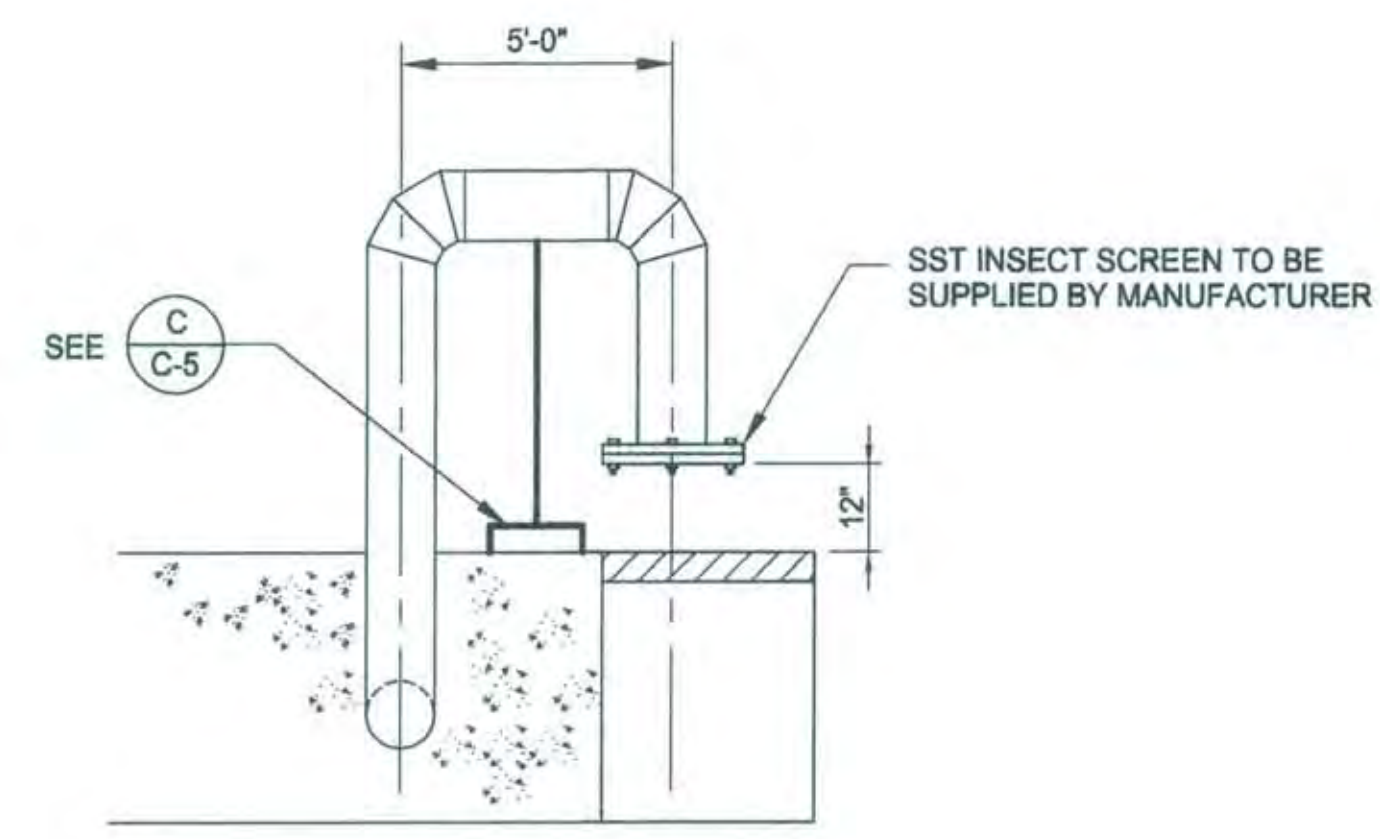
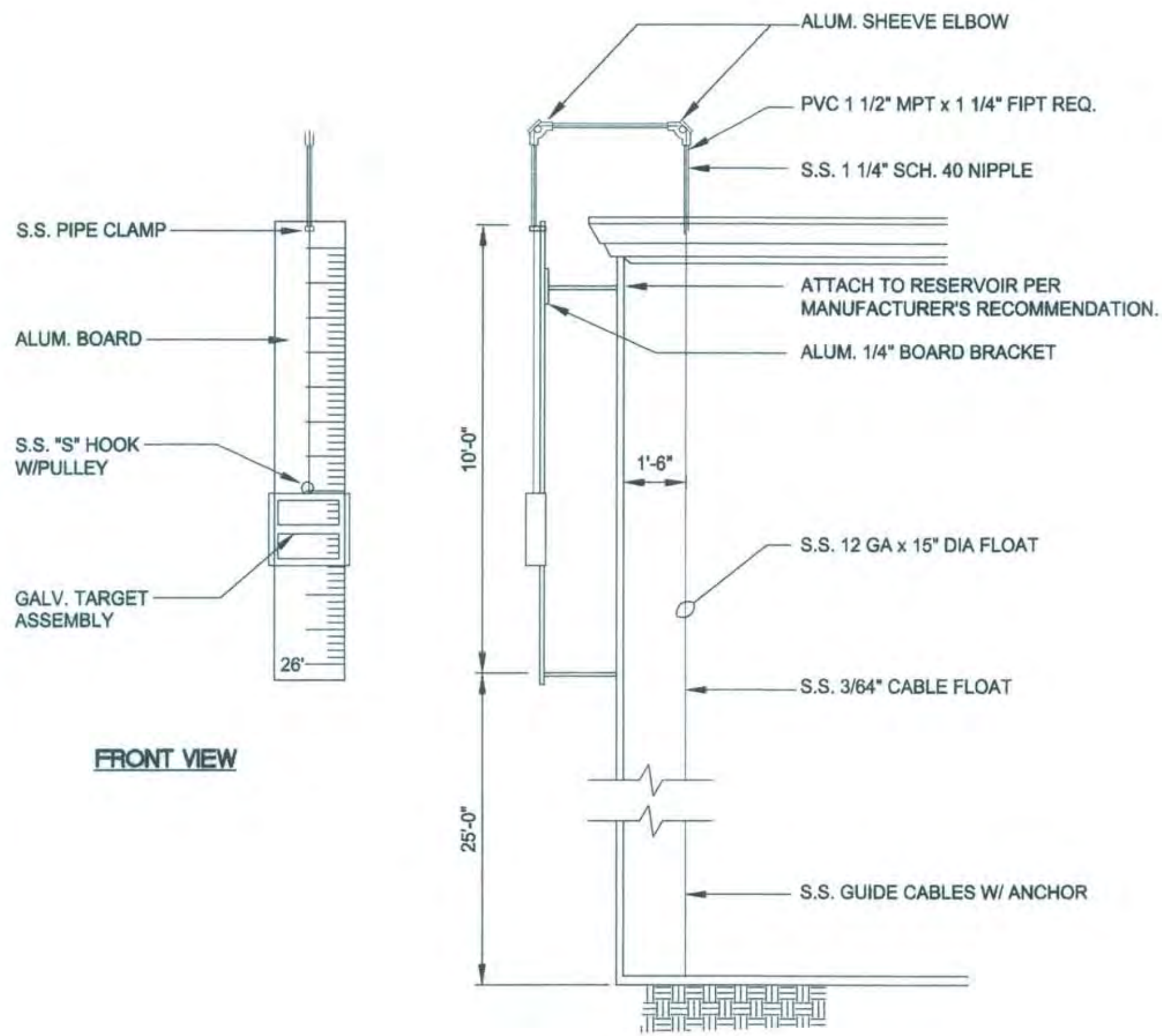


PROJECT NAME: ZJB6 ELKHORN RESERVOIR  
CAD FILE:R:\SDSK\PROJ\ZJB6 ELKHORN RESERVOIR.dwg\

PN: ZJ36	REVISIONS				BENCH MARK	ELEV. 15.829	FIELD BOOK	1"		CITY OF SACRAMENTO			IMPROVEMENT PLANS FOR:			PLANNING NO.	DWG. NO.
	NO.	DESCRIPTION	DATE	BY	DESCRIPTION: BM257-B3B		1448			DEPARTMENT OF UTILITIES			WATER DISTRIBUTION IMPROVEMENTS			PN: ZJ36	C-6
	X				SAC COUNTY BM 1A-43 DISK IN		SCALE:	ON ORIGINAL SCALE			DRAWN BY: A. VELAZQUEZ	DESIGNED BY: M. PETERSON	CHECKED BY: D. SHERRY	WATER DWG NO.	9		
	X				BRIDGE (E) OF ELKHORN BLVD. &		H: ON ORIGINAL SCALE	DRAWING ADJUST		DATE: 042505	R.C.E. NO. 67006 DATE: 042505	R.C.E. NO. 53630 DATE: 042505	GIS GRID NO.	OF			
	X				NATOMAS BLVD. (S) SIDE OF		V: ON ORIGINAL SCALE	SCALED DIMENSIONS					JLB	54			
	X				ELKHORN BLVD.			IF THIS DOES NOT									
							SCALE AT 1"										

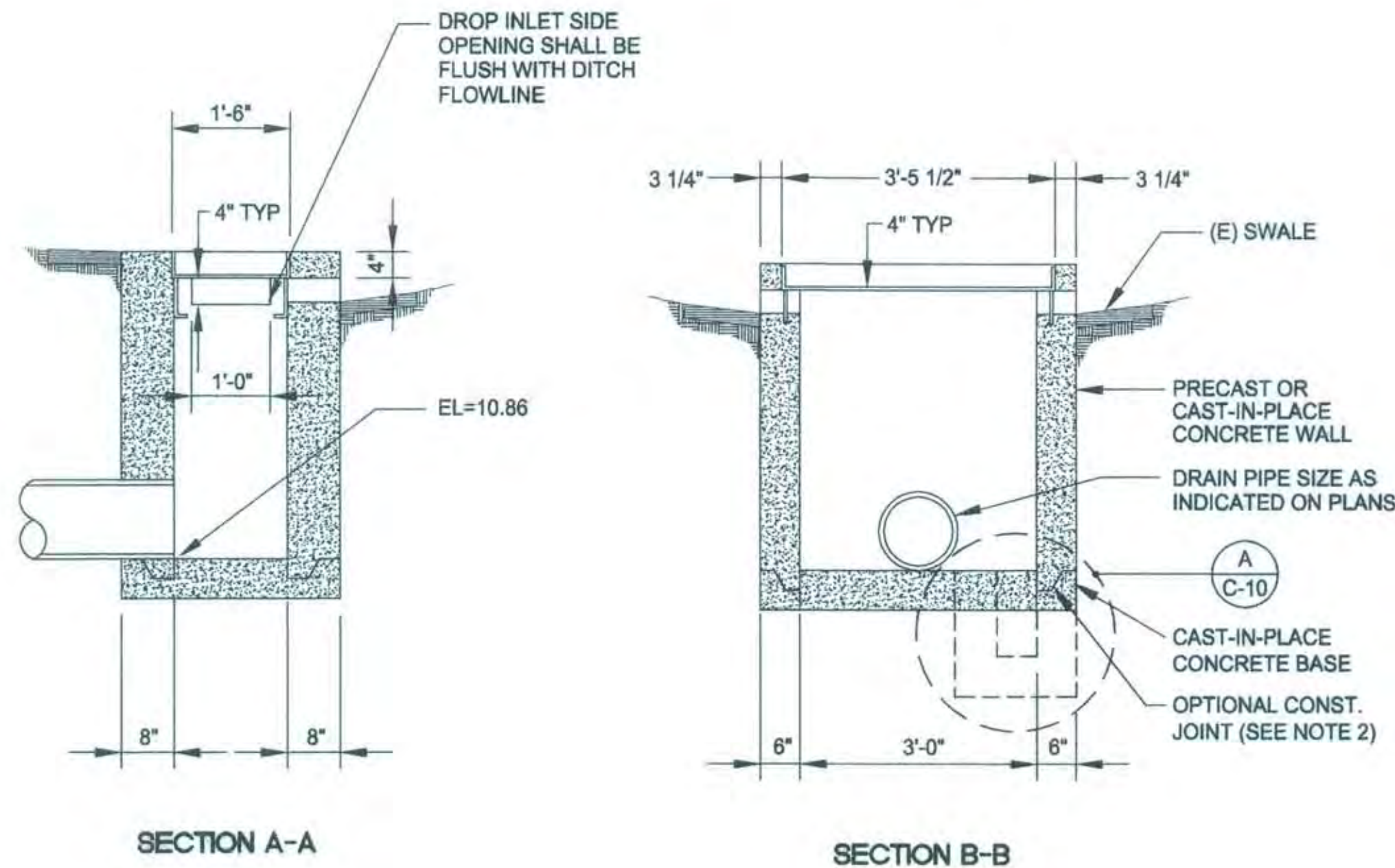
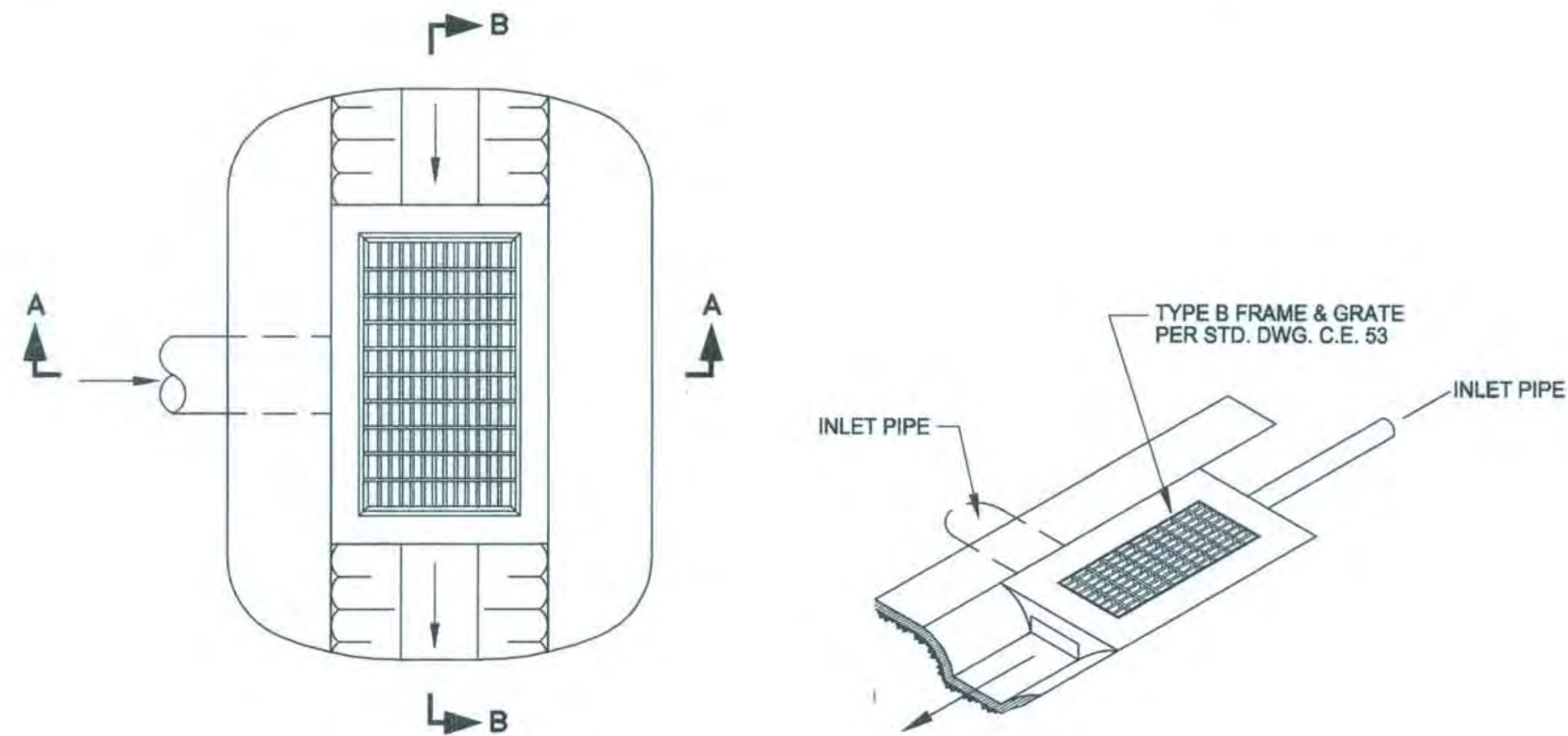


PROJECT NAME: ZJB6 ELKHORN RESERVOIR  
CAD FILE: S05KPROJ.ZJB6 ELKHORN RESERVOIR.dwg



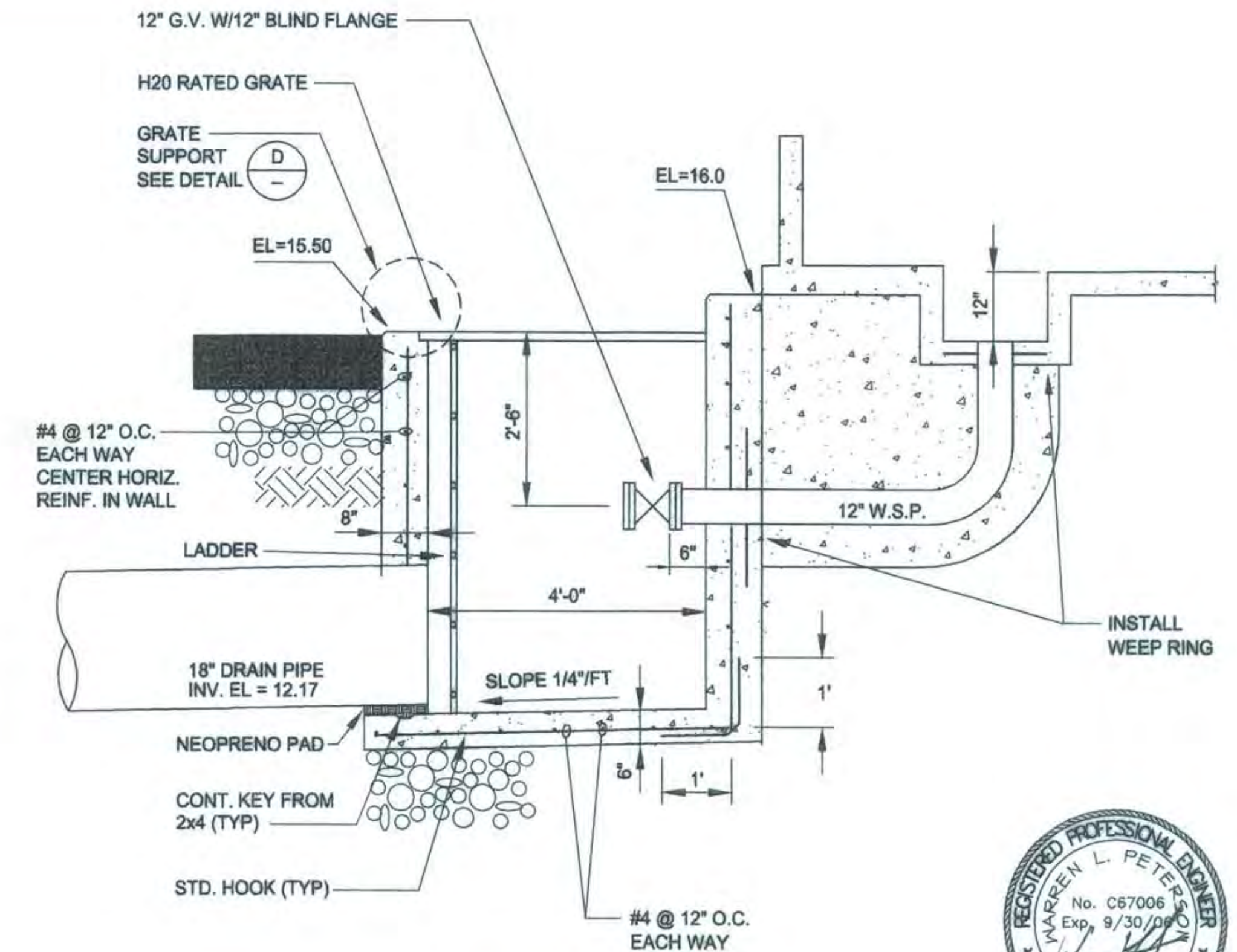
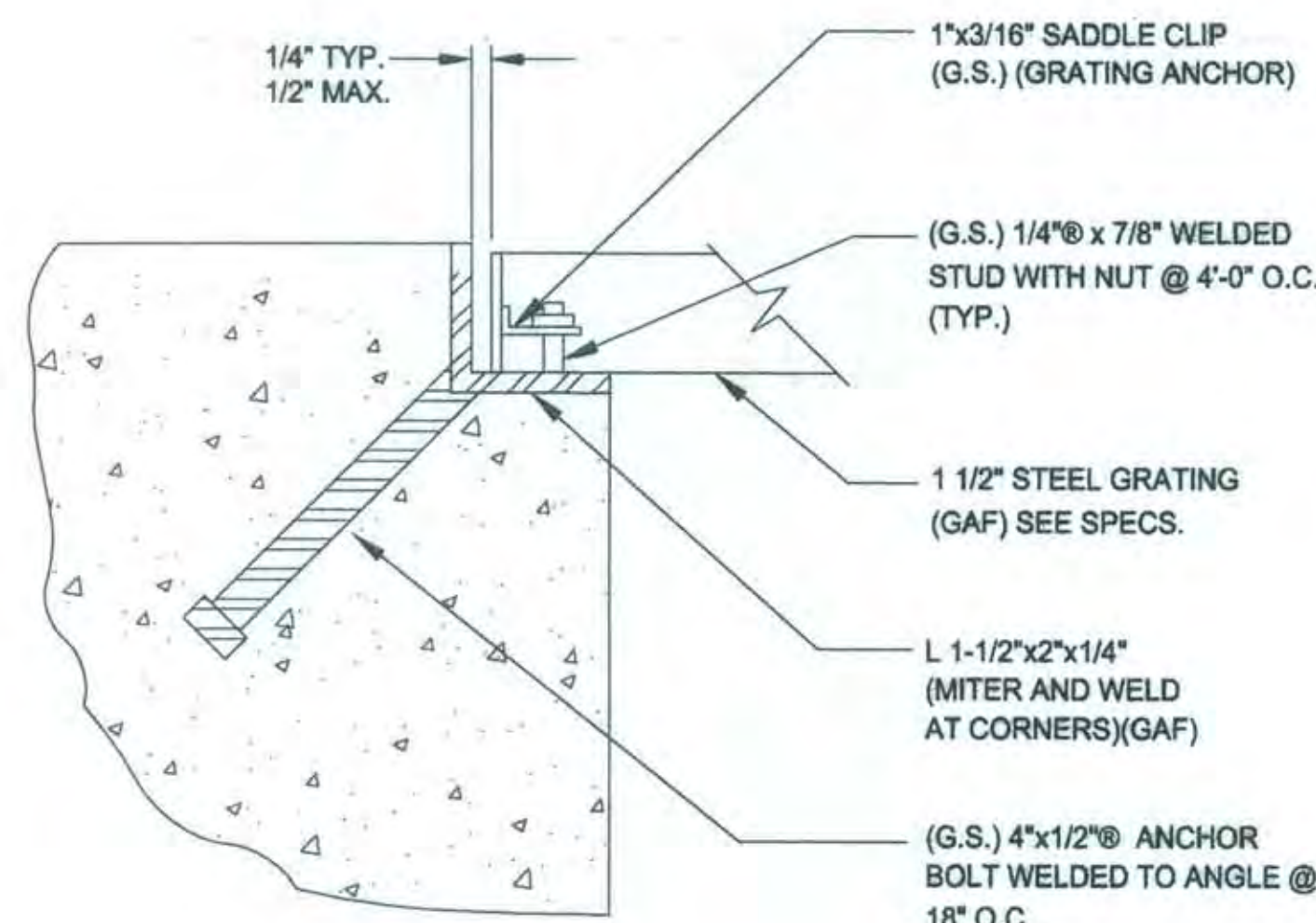
PN: ZJ36	REVISIONS				BENCH MARK ELEV. 15.829 DESCRIPTION: BM257-B3B SAC COUNTY BM 1A-43 DISK IN BRIDGE (E) OF ELKHORN BLVD. & NATOMAS BLVD. (S) SIDE OF ELKHORN BLVD.	FIELD BOOK 1448 SCALE: H: _____ V: _____	<div>1"</div> <div>ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"</div>		CITY OF SACRAMENTO DEPARTMENT OF UTILITIES			IMPROVEMENT PLANS FOR:  WATER DISTRIBUTION IMPROVEMENTS 3 MILLION GALLON ELKHORN RESERVOIR DRAIN AND OVERFLOW SECTION AND DETAILS				PLANNING NO. PN: ZJ36 WATER DWG NO. 615 GRID NO. J13	DWS. NO. C-7 SHEET 10 OF 54
	NO.	DESCRIPTION	DATE	BY													
DRAWN BY: A. VELAZQUEZ						DESIGNED BY: W. PETERSON		CHECKED BY: D. SHERRY		DATE: 042505		R.C.E. NO. 61006 DATE: 042505		R.C.E. NO. 53630 DATE: 042505			



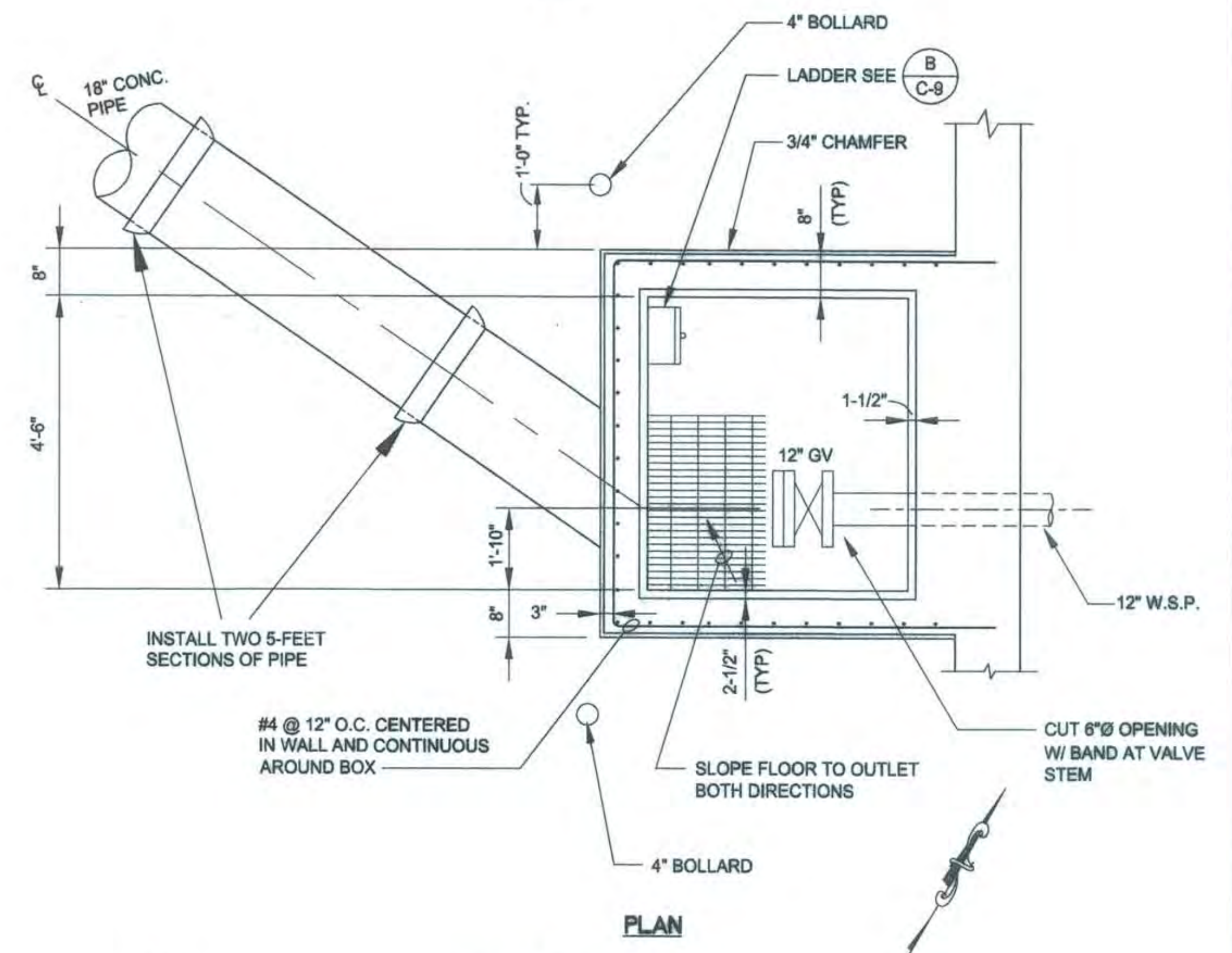


#### NOTES:

1. THERE SHALL BE A SIDE INLET FACING CHANNEL.
2. CAST-IN-PLACE CONCRETE INLETS SHALL CONFORM TO SECTION 20 OF THE STANDARD SPECIFICATIONS.
  - A. MINIMUM WALL THICKNESS: 6"
  - B. REINFORCEMENT: #4 BARS AT 12" O.C. EACH WAY WITH 2" MIN. COVER FROM INSIDE FACE; ALL WALLS.
  - C. BOTTOM OF INLET SHALL BE PLACED AT SAME TIME AS SIDE WALLS, UNLESS OTHERWISE APPROVED.
3. PRECAST INLETS TO BE RATED FOR H2O LOADING & SHALL BE PRE-APPROVED BY THE ENGINEER.



ELEVATION  
N.T.S.



PLAN

OVERFLOW BOX DETAIL

N.T.S.

F  
C-1 DITCH BOX DETAIL N.T.S.

D  
INLET SECTION - PROFILE N.T.S.

PROJECT NAME: ZJB6 ELKHORN RESERVOIR  
CAD FILE: SD5KPROJ.ZJB6 ELKHORN RESERVOIR.dwg

PN: ZJ36

#### REVISIONS

NO.	DESCRIPTION	DATE	BY

BENCH MARK ELEV. 15.824  
DESCRIPTION: BM251-B3B  
SAC COUNTY BM 1A-43 DISK IN  
BRIDGE (E) OF ELKHORN BLVD. &  
NATOMAS BLVD. (S) SIDE OF  
ELKHORN BLVD.

FIELD BOOK  
1448  
SCALE:  
ON ORIGINAL SCALE  
DRAWING ADJUST  
SCALED DIMENSIONS  
IF THIS DOES NOT  
SCALE AT 1"

1"  
CITY OF SACRAMENTO  
DEPARTMENT OF UTILITIES

DRAWN BY: A. VELAZQUEZ  
DATE: 042505

DESIGNED BY: W. PETERSON  
R.C.E. NO. 67006 DATE: 042505

CHECKED BY: D. SHERRY  
R.C.E. NO. 53638 DATE: 042505

IMPROVEMENT PLANS FOR:  
WATER DISTRIBUTION IMPROVEMENTS  
3 MILLION GALLON ELKHORN RESERVOIR  
DRAIN AND OVERFLOW DETAILS 2

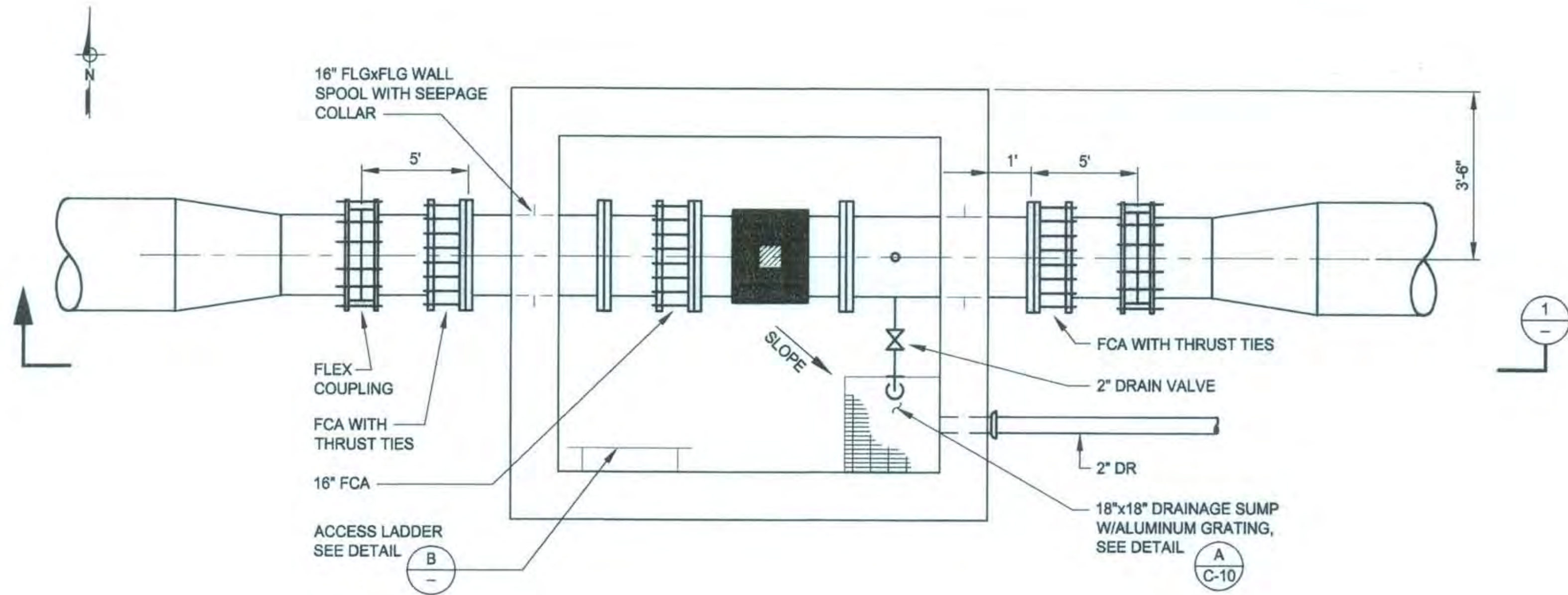
PLANNING NO.  
PN: ZJ36  
WATER DWG NO.  
315 GRID NO.  
J13

DWG. NO.  
C-8  
SHEET  
11  
OF  
54

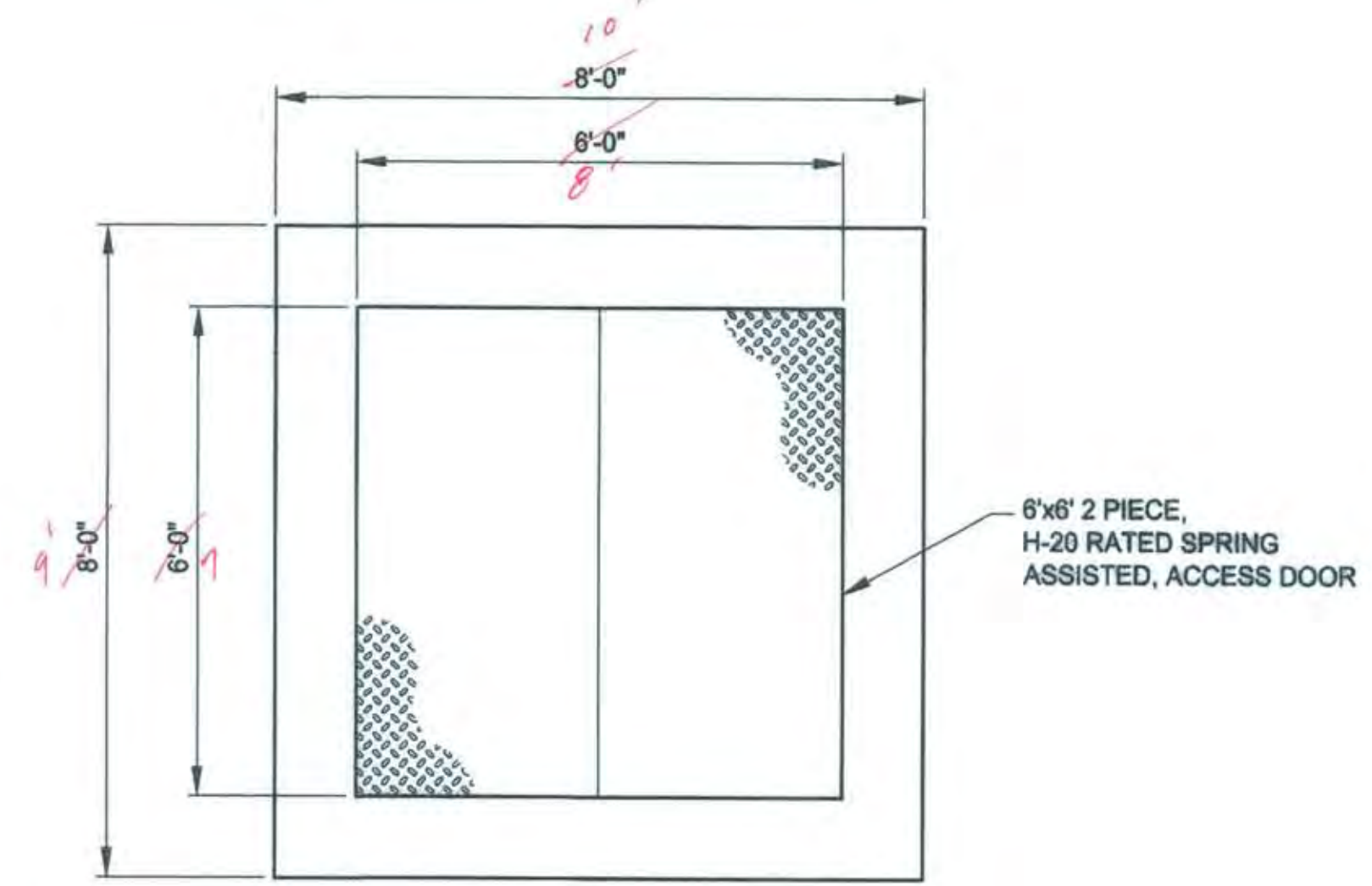




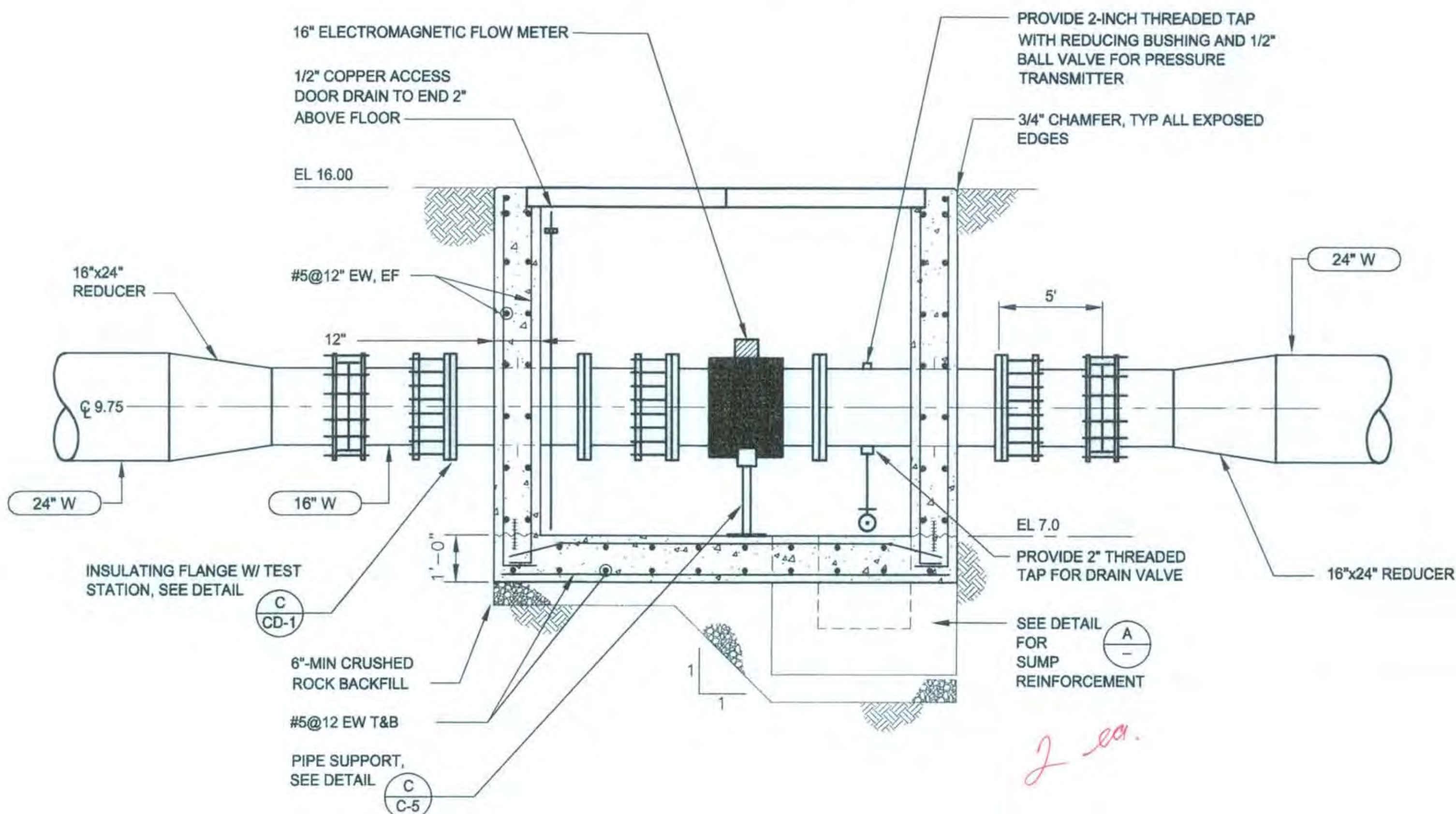




**FLOW METER VAULT  
PLAN**  
SCALE: 1/2"=1'-0"

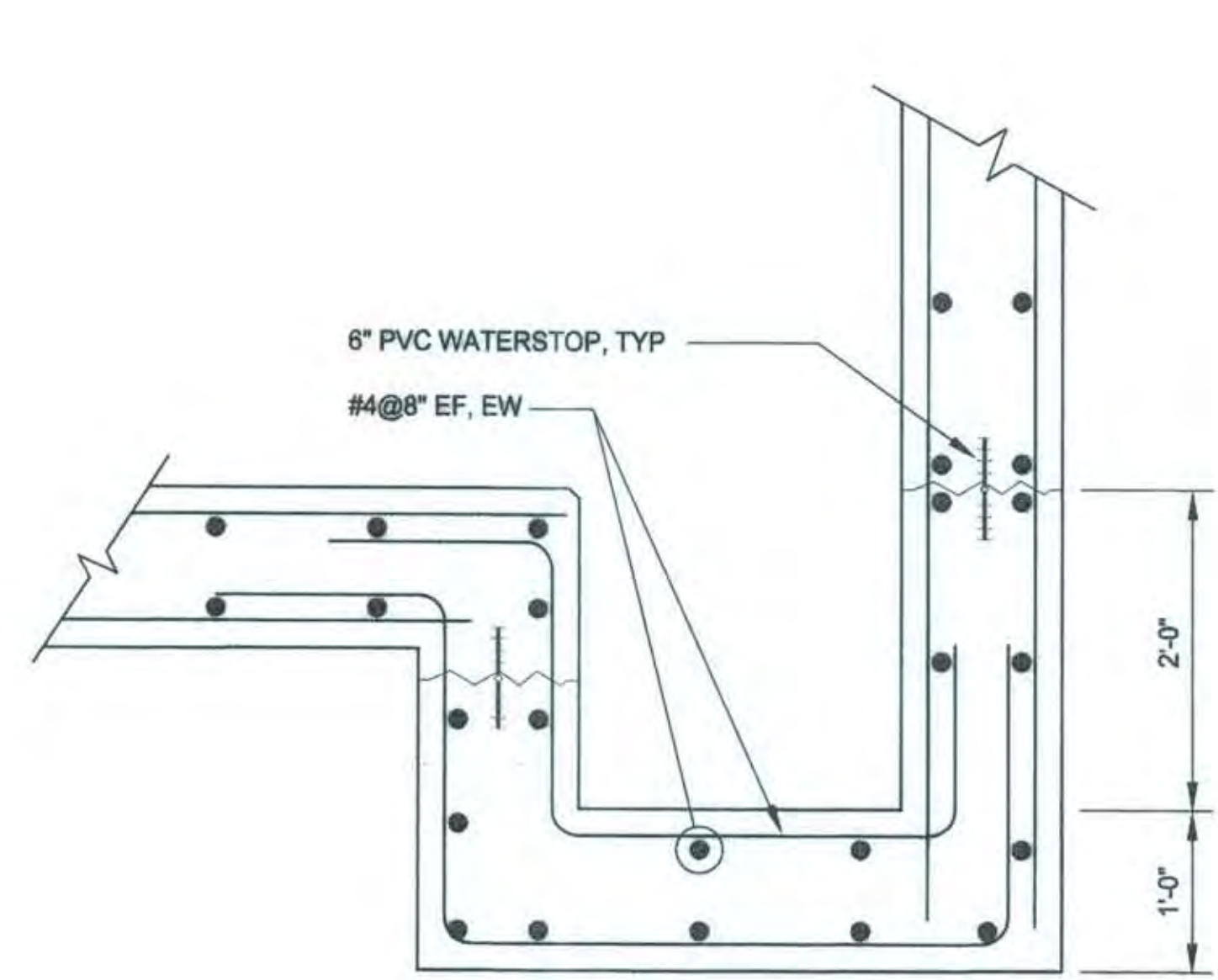


**VAULT TOP PLAN**  
SCALE: 1/2"=1'-0"

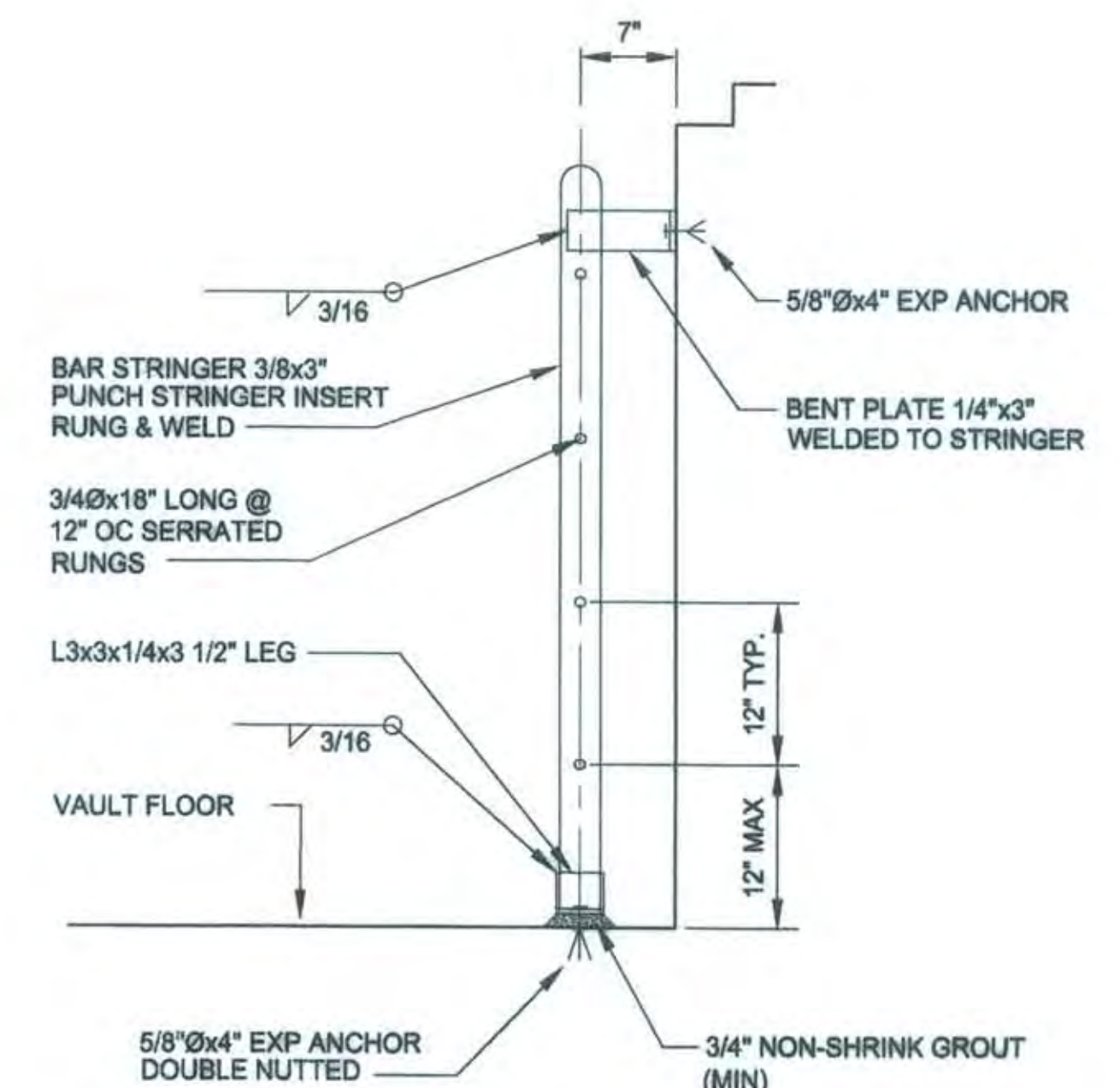


**FLOW METER VAULT  
SECTION 1**  
SCALE: 1/2"=1'-0"

**NOTE:**  
CONTRACTOR SHALL INSTALL TWO BLIND  
FLANGES FOR FUTURE VAULT W/ NO FLOW METER.



**SUMP REINFORCEMENT  
DETAIL A**  
SCALE: 1"=1'-0"



**GALVANIZED STEEL ACCESS LADDER  
DETAIL B**  
N.T.S.

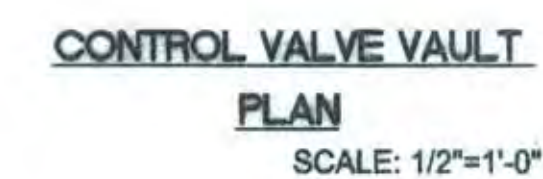
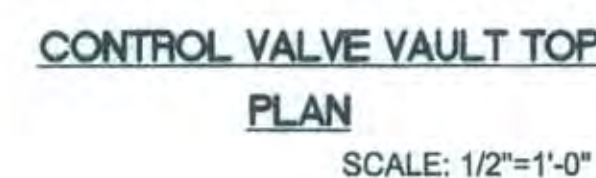
**NOTES:**  
1. PROVIDE 1" CLEARANCE BETWEEN  
LADDER & BOTTOM OF ACCESS  
DOOR.  
2. PROVIDE TELESCOPING LADDER  
SAFETY POST.




PROJECT NAME: ZJB6 ELKHORN RESERVOIR  
CAD FILE: 505KPROJ.ZJB6 ELKHORN RESERVOIR.dwg

PN: ZJ36	REVISIONS			BENCH MARK ELEV. 15.829 DESCRIPTION: BM251-B3B SAC COUNTY BM 1A-43 DISK IN BRIDGE (E) OF ELKHORN BLVD. & NATOMAS BLVD. (S) SIDE OF ELKHORN BLVD.	FIELD BOOK 1448 SCALE: ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"	CITY OF SACRAMENTO DEPARTMENT OF UTILITIES	IMPROVEMENT PLANS FOR: <b>WATER DISTRIBUTION IMPROVEMENTS 3 MILLION GALLON ELKHORN RESERVOIR FLOW METER VAULT</b>	PLANNING NO. PN: ZJ36 WATER DWG NO. 615 GRID NO. J13	DWG. NO. C-9 SHEET 12 OF 54
	NO.	DESCRIPTION	DATE	BY					
1						DRAWN BY: A. VELAZQUEZ DATE: 042505	DESIGNED BY: W. PETERSON R.C.E. NO. 67006 DATE: 042505	CHECKED BY: D. SHERRY R.C.E. NO. 53630 DATE: 042505	



PN: ZJ36[illegible]

BENCH MARK ELEV. 15.829  
DESCRIPTION: BM257-B3B  
SAC COUNTY BM 1A-43 DISK IN  
BRIDGE (E) OF ELKHORN BLVD. &  
NATOMAS BLVD. (S) SIDE OF  
ELKHORN BLVD.

FIELD BOOK	
1448	
SCALE:	ON ORIGINAL SCALE
H: _____	DRAWING ADJUST
V: _____	SCALED DIMENSIONS
	IF THIS DOES NOT
	SCALE AT 1"



CITY  
OF DENVER

DRAWN BY: A. VELAZQUEZ  
DATE: 042505

Y OF SACI  
DEPARTMENT OF

DESIGNED BY: W. PETERSON  
R.C.E. NO. 67006 DATE: 042505

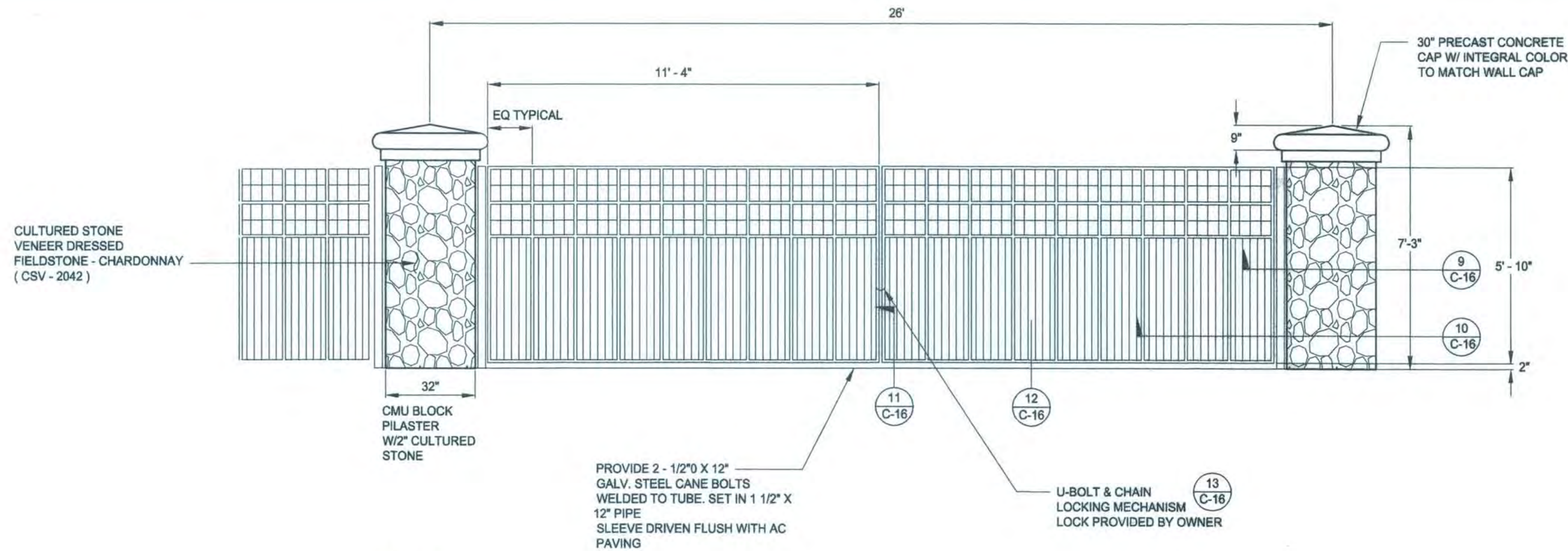
RAMENTO  
UTILITIES

CHECKED BY: D. SHERRY
R.C.E. NO. 53638 DATE: 042505

IMPROVEMENT PLANS FOR:  
**WATER DISTRIBUTION IMPROVEMENTS  
 3 MILLION GALLON ELKHORN RESERVOIR  
 CONTROL VALVE VAULT**

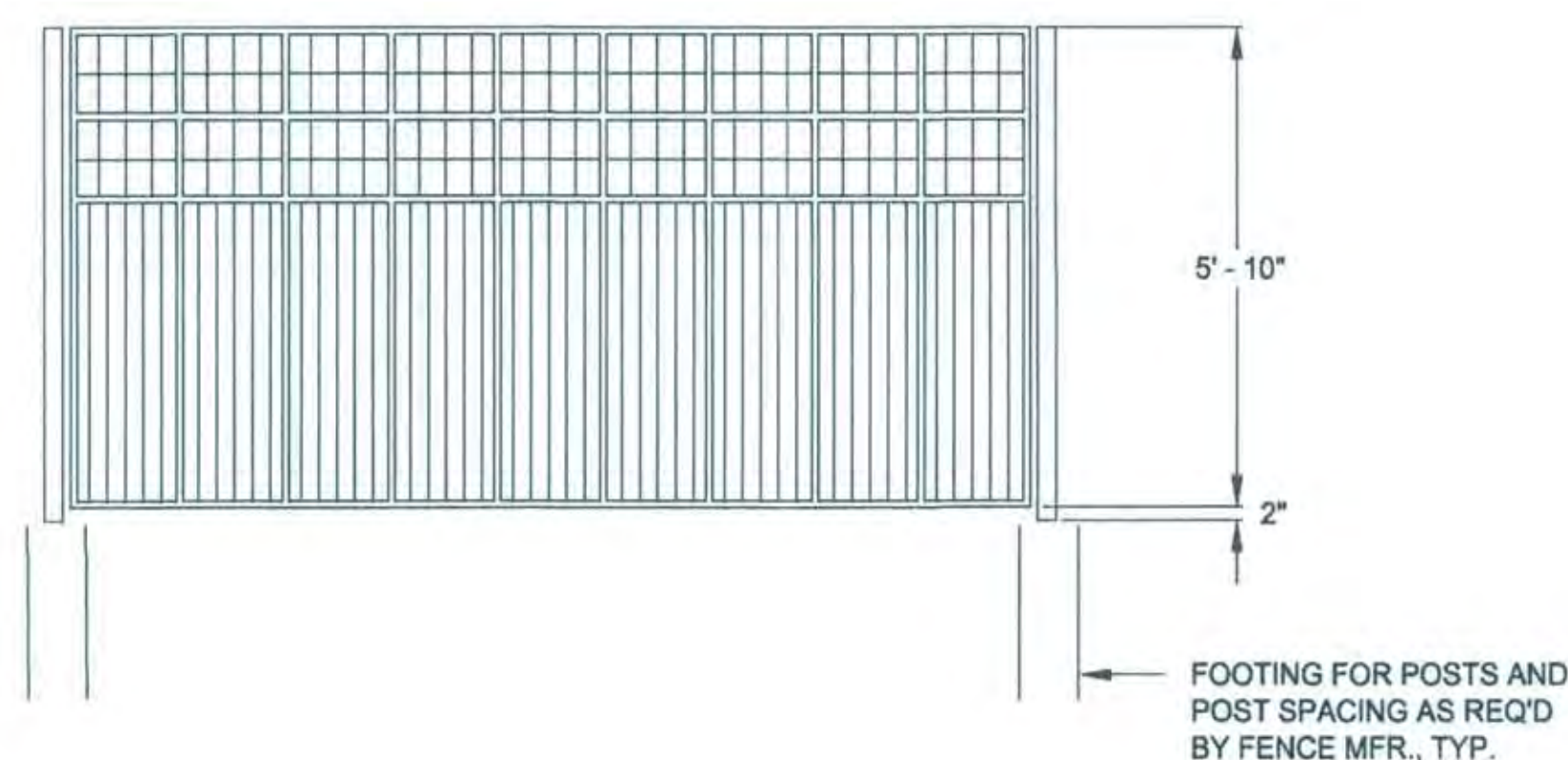
PLANNING NO.	DWG. NO. <b>C-10</b>
PN: <b>ZJ36</b>	SHEET <b>13</b>
WATER DWG NO.	OF
GIS GRID NO. J13	<b>54</b>





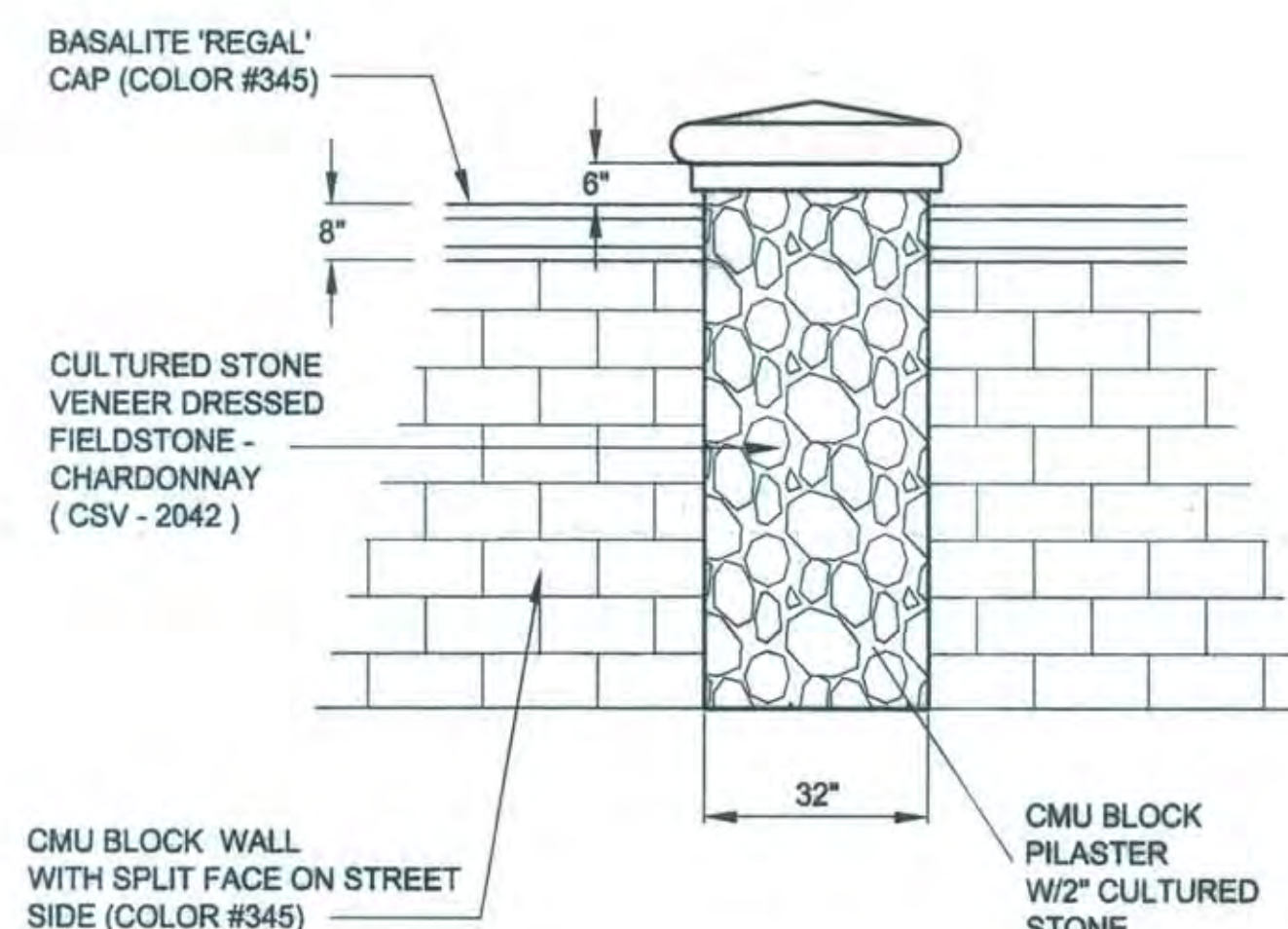
**NOTES:**  
PROVIDE BRACING ON EACH GATE AS REQ'D BY GATE MFR.

**VEHICLE GATE ELEVATION**

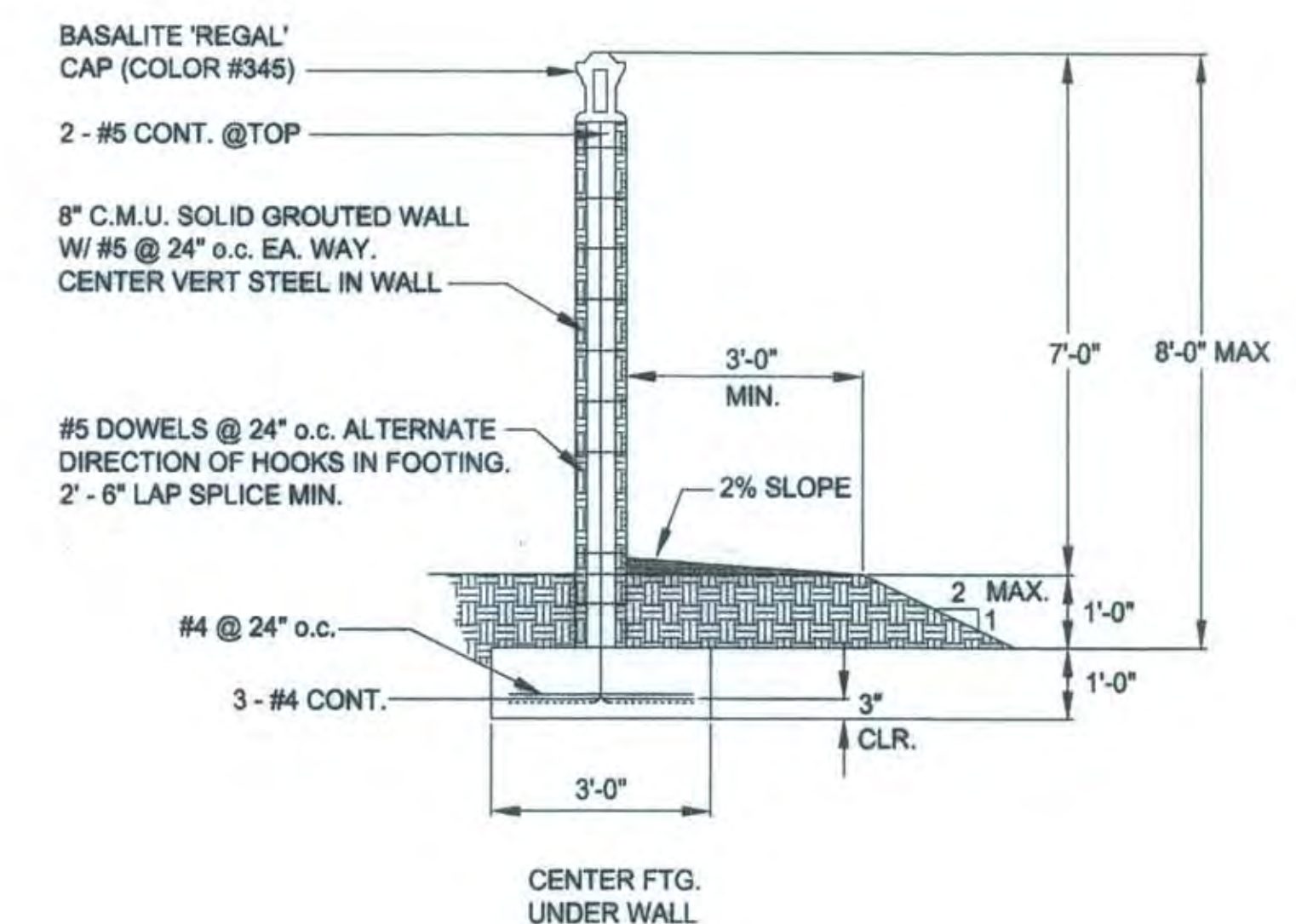


**NOTES:**  
WROUGHT IRON GATES AND FENCE MAY BE CONSTRUCTED OF CARBON STEEL AND POWDER COATED BLACK.

**WROUGHT IRON FENCE ELEVATION**



**PILASTER DETAIL**



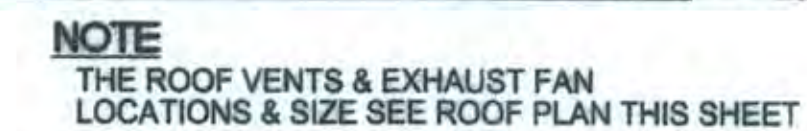
**CMU DETAIL**



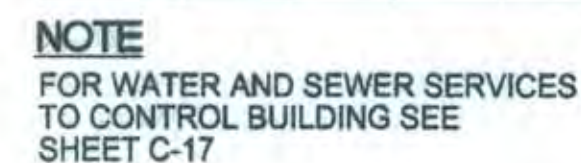
PROJECT NAME: 3.00 ELKHORN RESERVOIR  
CAD FILE: 030300ZJ36 ELKHORN RESERVOIR.dwg

PN: ZJ36	REVISIONS				BENCH MARK ELEV. 15.029 DESCRIPTION: BM257-B3B SAC COUNTY BM 1A-43 DISK IN BRIDGE (E) OF ELKHORN BLVD. & NATOMAS BLVD. (S) SIDE OF ELKHORN BLVD.	FIELD BOOK 1448  SCALE: ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"	 1"   CITY OF SACRAMENTO DEPARTMENT OF UTILITIES	IMPROVEMENT PLANS FOR:			PLANNING NO.	DWS. NO.
	NO.	DESCRIPTION	DATE	BY				WATER DISTRIBUTION IMPROVEMENTS				
								3 MILLION GALLON ELKHORN RESERVOIR				
								CMU WALL DETAILS 1				
							DRAWN BY: A. VELAZQUEZ DATE: 042505	DESIGNED BY: W. PETERSON R.C.E. NO. 61006 DATE: 042505	CHECKED BY: D. SHERRY R.C.E. NO. 53638 DATE: 042505			
										PN: ZJ36 WATER DWS. NO.	C-14 SHEET 17 OF 54	
										GIS GRID NO. J13		



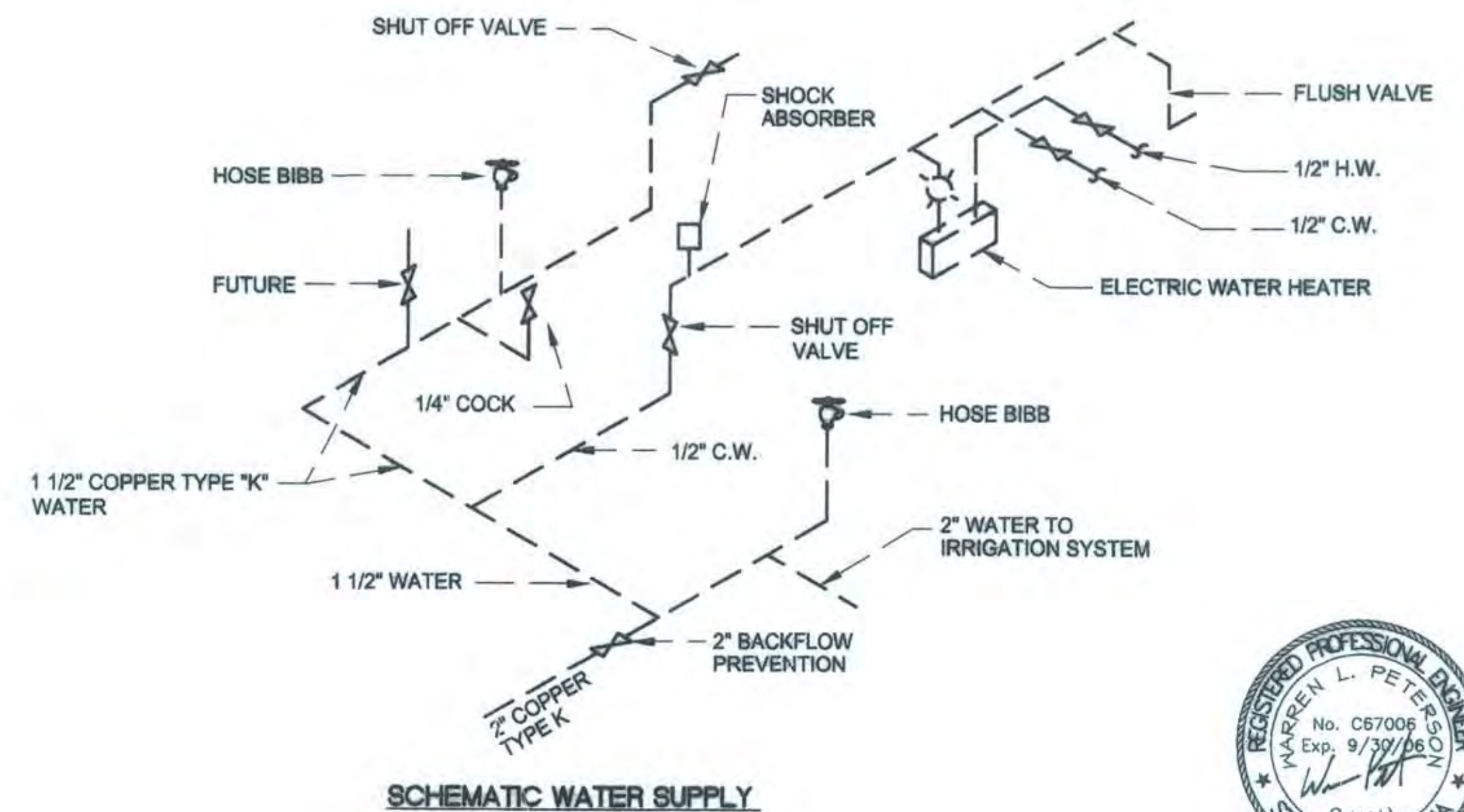
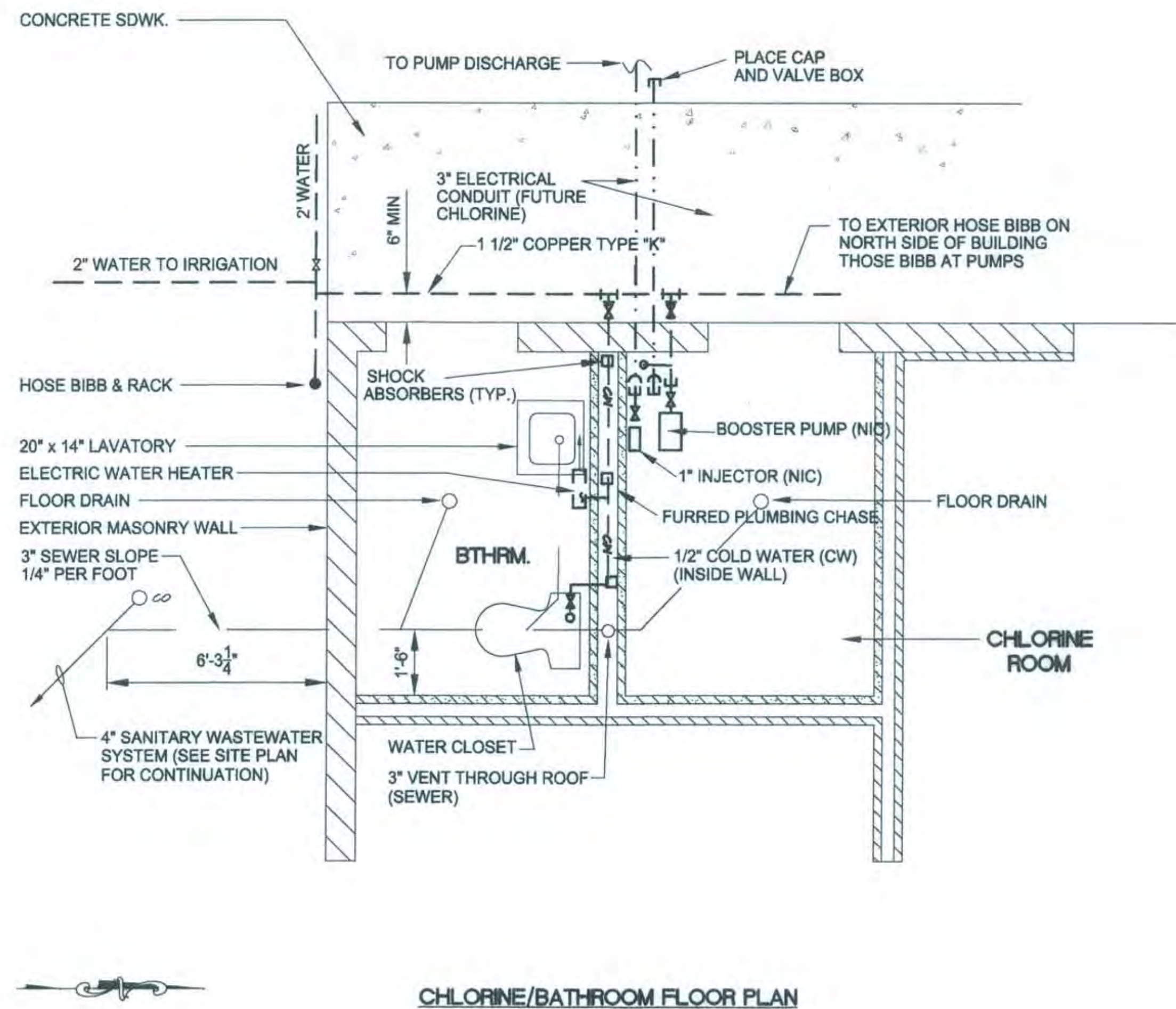
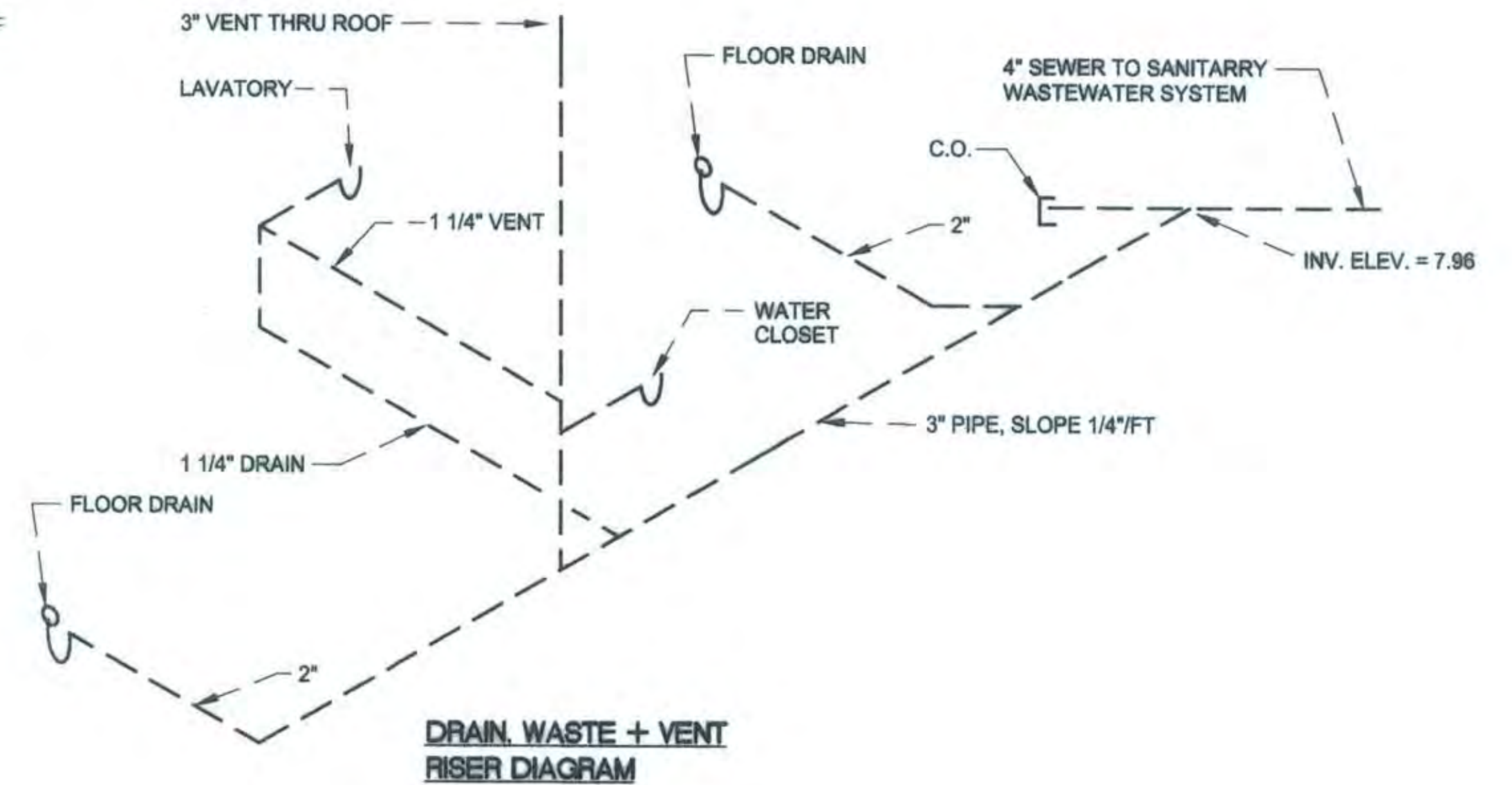
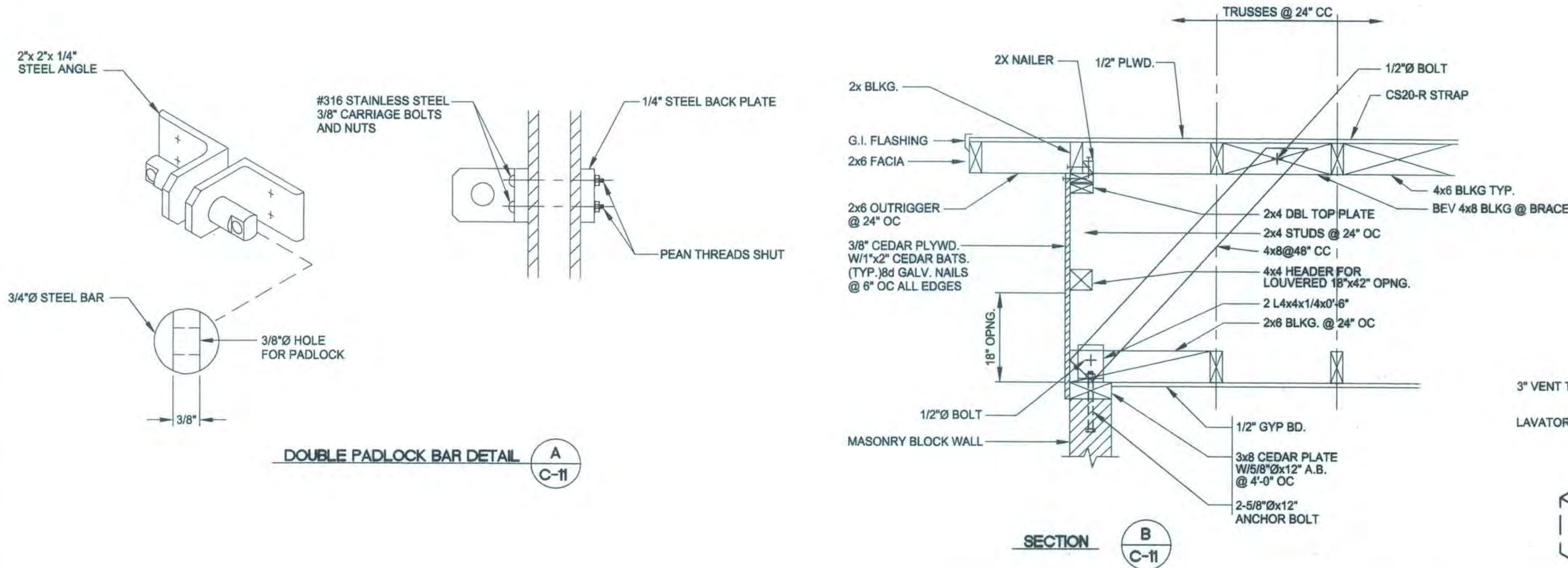


NORTH + SOUTH ELEVATION



PLANNING NO.	DWG. NO.
PN: ZJ36	C-11
WATER DWG NO.	SHEET
	14
	OF
GIS GRID NO.	54

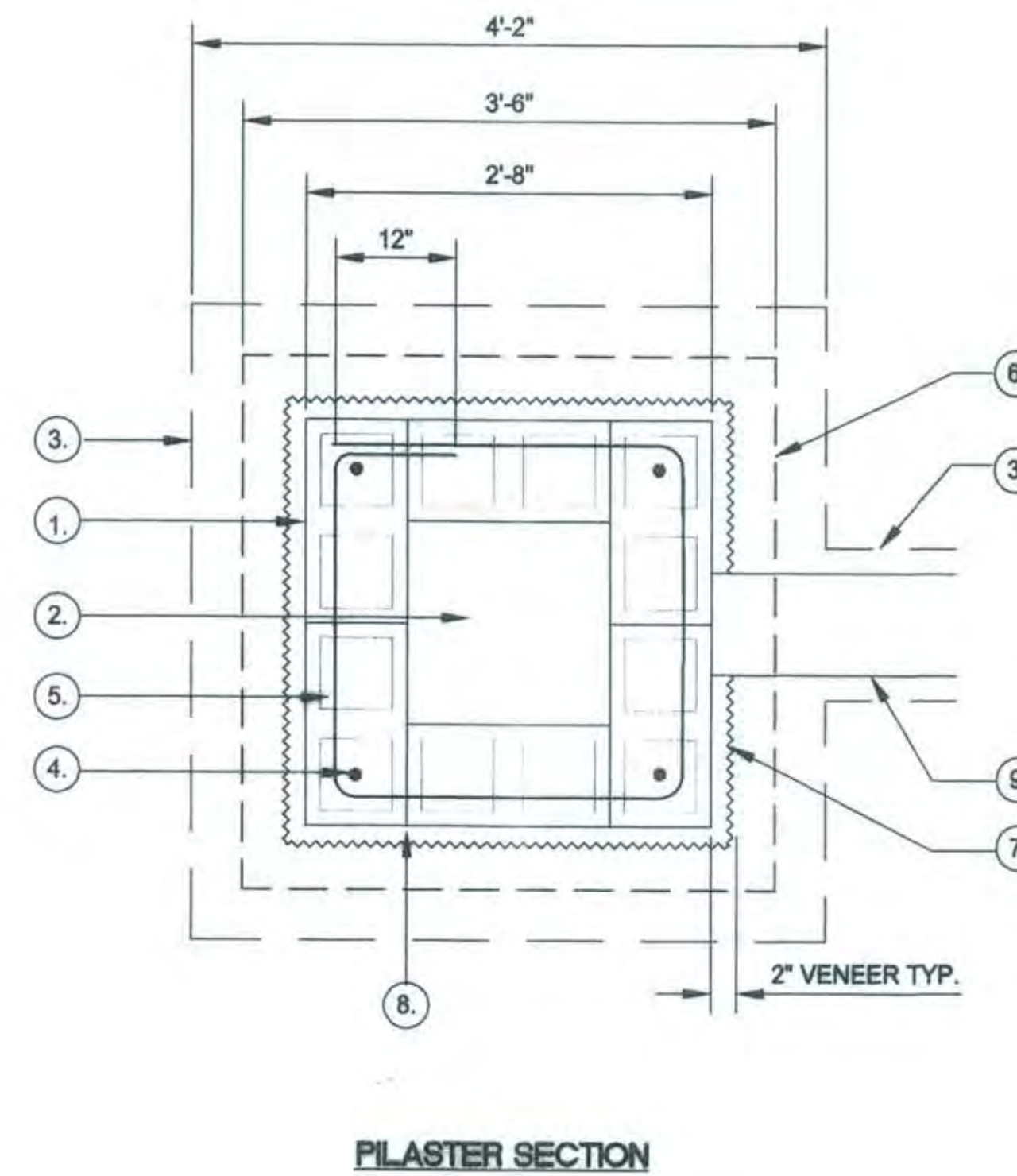
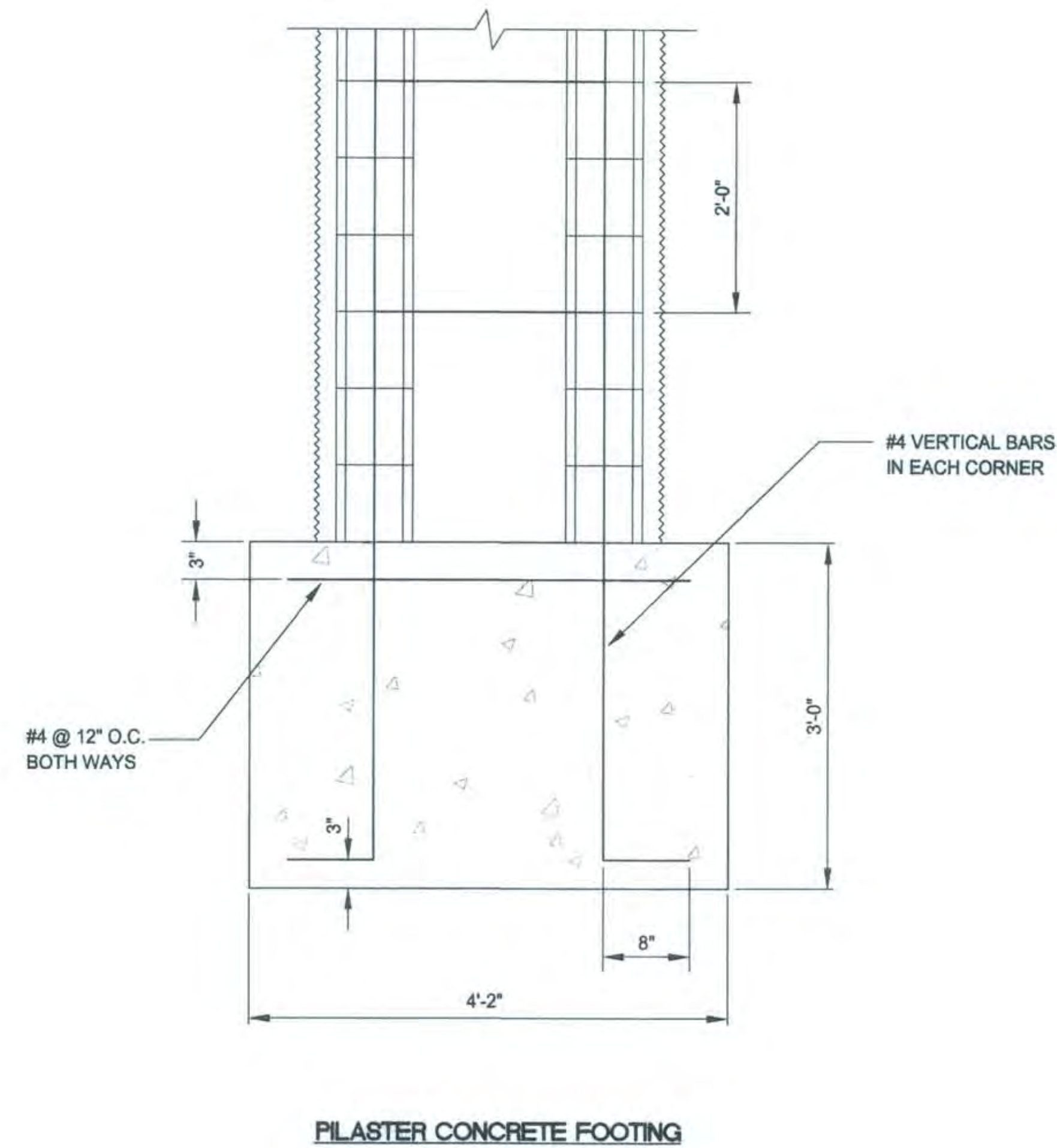




PROJECT NAME: 3.000 ELKHORN RESERVOIR  
CAD FILE: R:\SDSKPROJ\J136 ELKHORN RESERVOIR\dwg\

PN: ZJ36	REVISIONS				BENCH MARK ELEV. 15.829 DESCRIPTION: BM251-B3B SAC COUNTY BM 1A-43 DISK IN BRIDGE (E) OF ELKHORN BLVD. & NATOMAS BLVD. (S) SIDE OF ELKHORN BLVD.	FIELD BOOK 1448 SCALE: ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"			CITY OF SACRAMENTO DEPARTMENT OF UTILITIES			IMPROVEMENT PLANS FOR:  WATER DISTRIBUTION IMPROVEMENTS 3 MILLION GALLON ELKHORN RESERVOIR CONTROL BUILDING DETAILS			PLANNING NO.	DWG. NO.
	NO.	DESCRIPTION	DATE	BY											PN: ZJ36	C-12
															WATER DWG NO.	15
															615 GRID NO.	OF
															J13	54
									DRAWN BY: A. VELAZQUEZ DATE: 042505		DESIGNED BY: W. PETERSON R.C.E. NO. 67006 DATE: 042505		CHECKED BY: D. SHERRY R.C.E. NO. 53630 DATE: 042505			





1. 8x8x16 CMU BLOCK, GROUT ALL CELLS SOLID
2. FILL VOID W/AGGREGATE AND APPLY 4" MIN. SKIM COAT SMOOTH TROWEL FINISH, TO TOP OF CMU BLOCK AS SHOWN
3. CONCRETE FOOTING
4. #4 VERTICAL BAR IN EACH CORNER
5. #4 HORIZONTAL BAR CONTINUOUS @ 24" O.C. TYP.
6. PRECAST CUSTOM CONCRETE CAP, TYP., SEE DETAIL
7. OUTLINE OF CULTURED STONE VENEER, GROUT ALL VOIDS
8. MORTAR PER MANUFACTURER'S INSTRUCTIONS
9. CONNECTING PROTO II MASONRY SOUNDWALL, PER PLANS

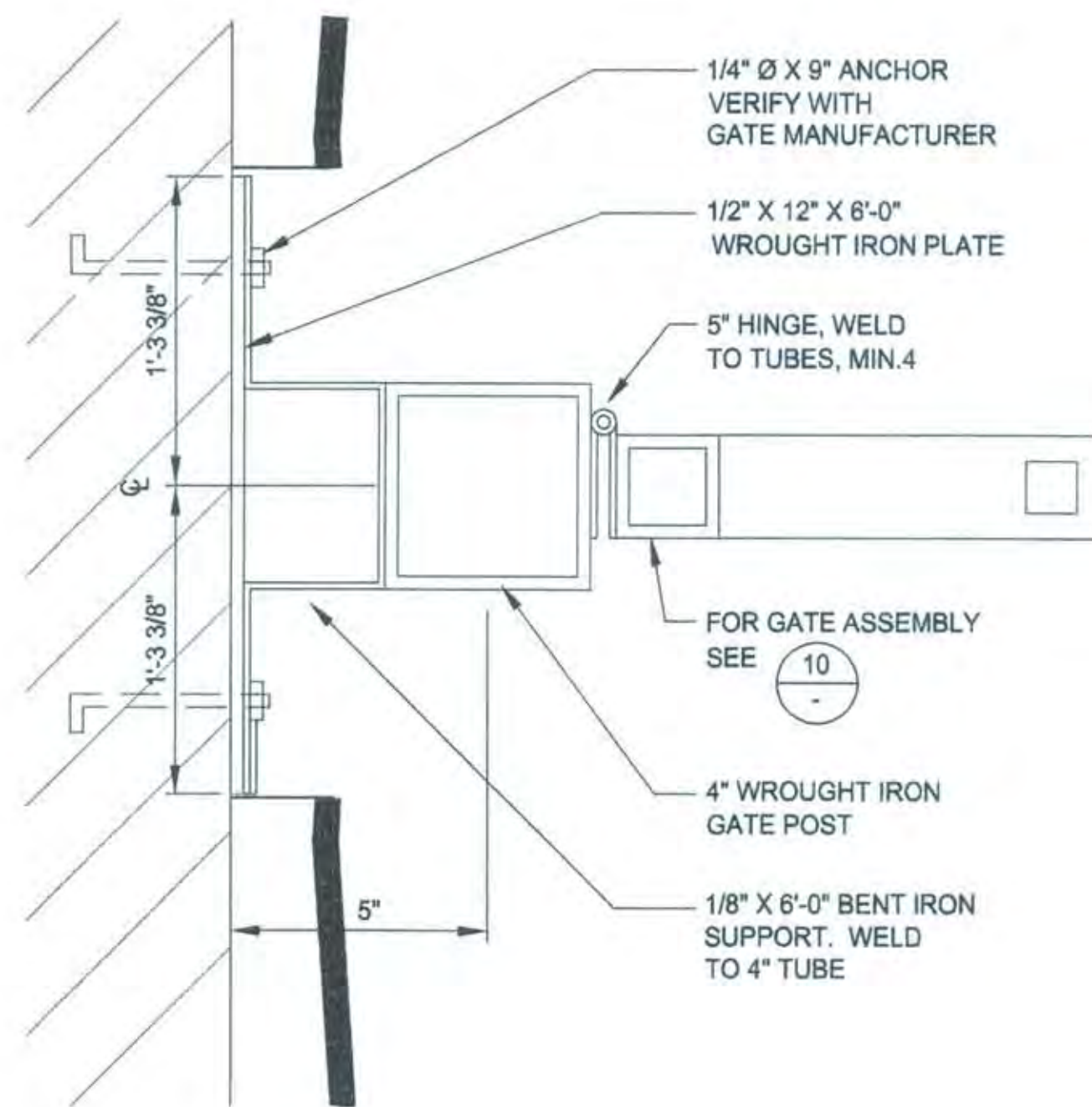


PROJECT NAME: 3 MILLION GALLON ELKHORN RESERVOIR  
 CAD FILE: R:\SDSK\PROJ\3 MILLION GALLON ELKHORN RESERVOIR.dwg

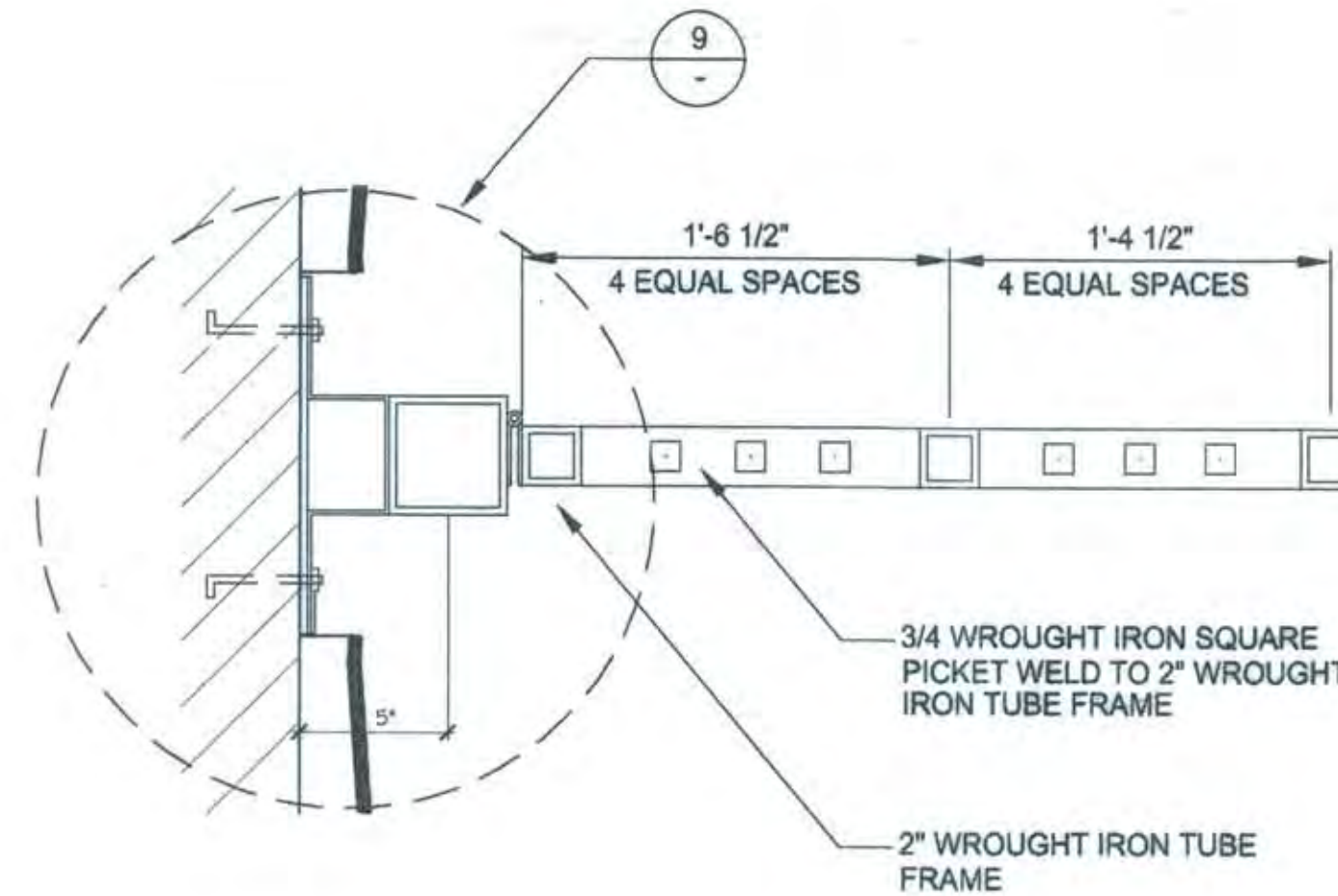
PN: ZJ36	REVISIONS				BENCH MARK ELEV. 15.829 DESCRIPTION: BM257-B3B SAC COUNTY BM 1A-43 DISK IN BRIDGE (E) OF ELKHORN BLVD. & NATOMAS BLVD. (S) SIDE OF ELKHORN BLVD.	FIELD BOOK 1448			CITY OF SACRAMENTO DEPARTMENT OF UTILITIES			IMPROVEMENT PLANS FOR: WATER DISTRIBUTION IMPROVEMENTS 3 MILLION GALLON ELKHORN RESERVOIR CMU WALL DETAILS 2	PLANNING NO. PN: ZJ36 WATER DWS NO. 615 GRID NO. J13	DWS. NO. C-15 SHEET 18 OF 54
	NO.	DESCRIPTION	DATE	BY										
SCALE: ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"					DRAWN BY: A. VELAZQUEZ DATE: 042505		DESIGNED BY: W. PETERSON R.C.E. NO. 67006 DATE: 042505		CHECKED BY: D. SHERRY R.C.E. NO. 58638 DATE: 042505					



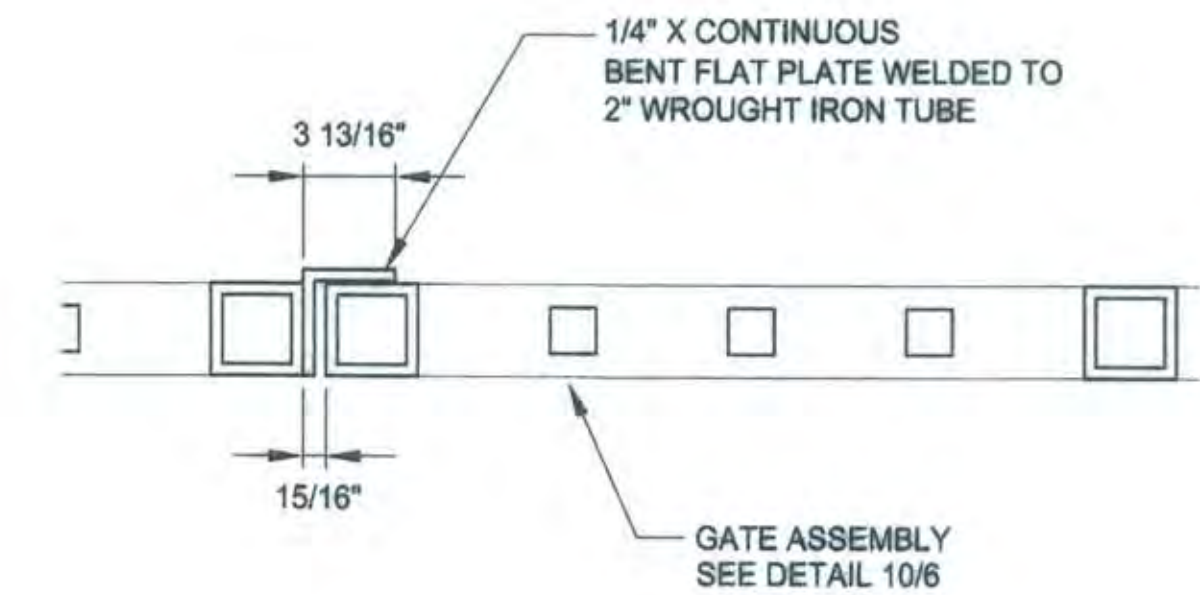
PROJECT NAME: ZJ36 ELKHORN RESERVOIR  
CAD FILE: R:\SDSKPROJ\ZJ36 ELKHORN RESERVOIR\dwg



9  
C-14  
GATE ATTACHMENT

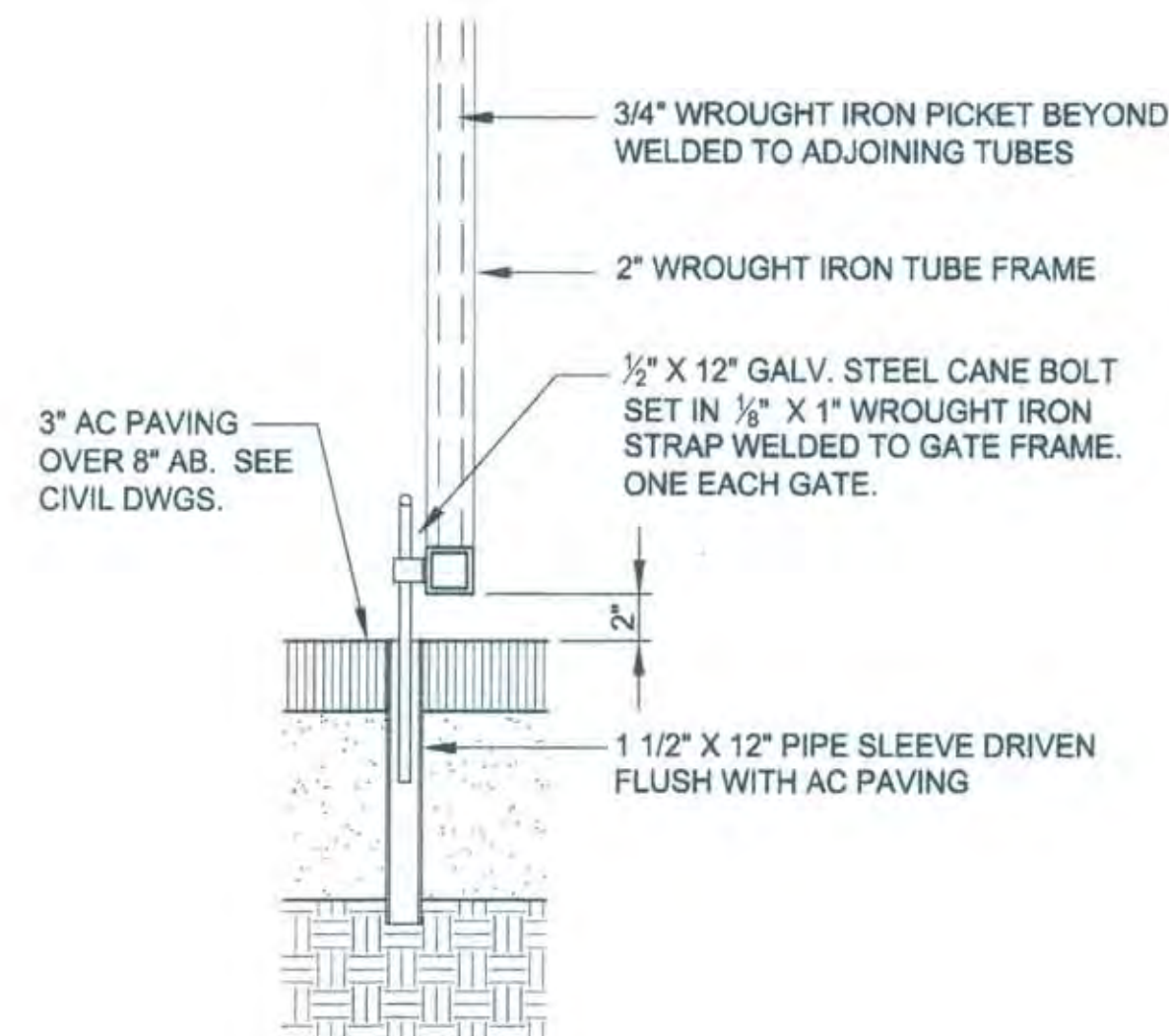


10  
C-14  
VEHICLE GATE ASSEMBLY

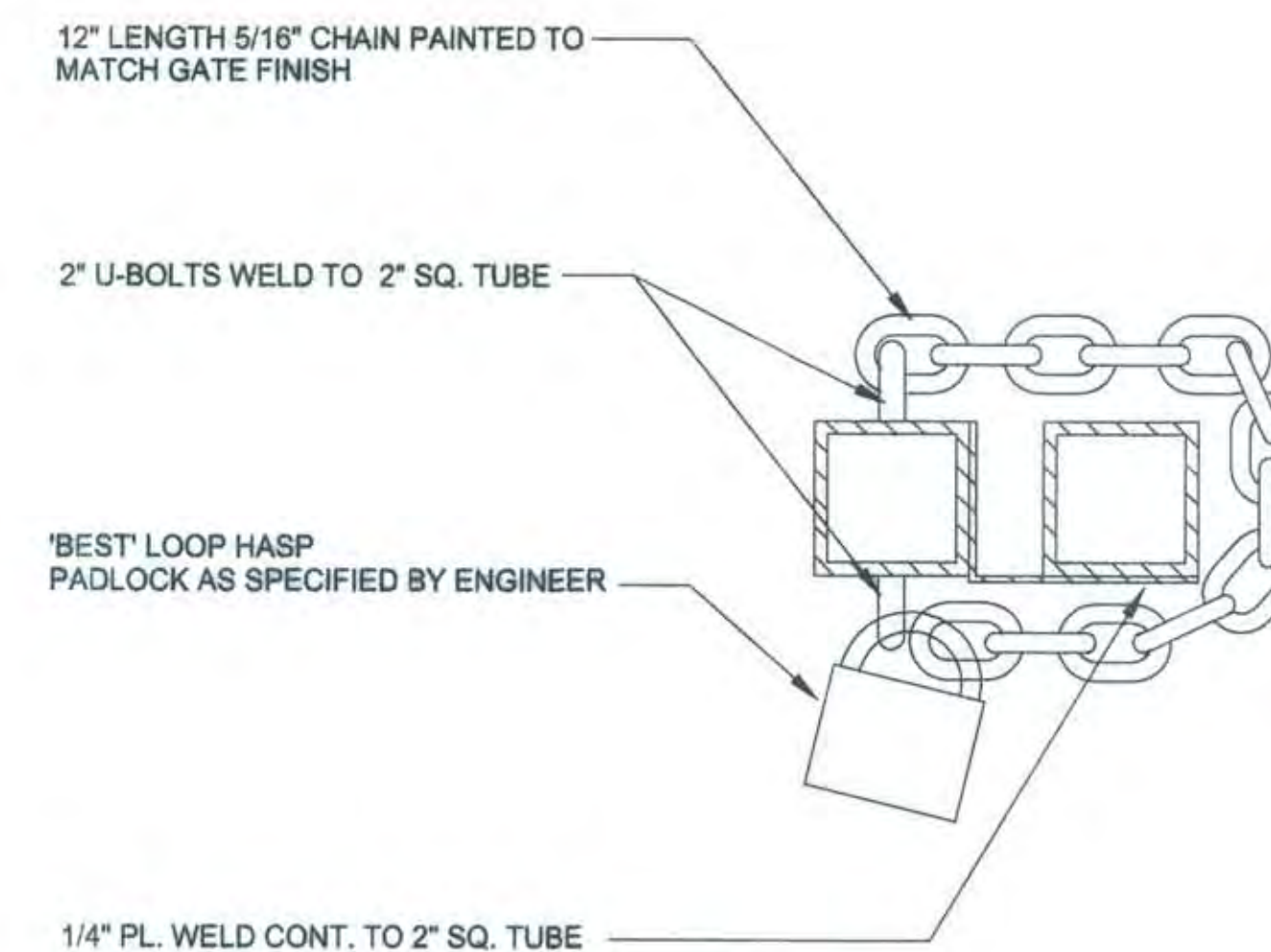


11  
C-14  
GATE ASTRAGAL

NOTE: PROVIDE "BEST"  
PADLOCK LOOP/HASP.  
VERIFY SPECIFICATIONS  
WITH ENGINEER.



12  
C-14  
GATE SECTION



13  
C-14  
GATE LOCKING MECHANISM

NOTE: PROVIDE BRACING FOR  
GATE AS REQ'D BY GATE MFR.



PN: ZJ36

REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK ELEV. 15.829  
DESCRIPTION: BM257-B3B  
SAC COUNTY BM 1A-43 DISK IN  
BRIDGE (E) OF ELKHORN BLVD. &  
NATOMAS BLVD. (S) SIDE OF  
ELKHORN BLVD.

FIELD BOOK  
1448  
SCALE: ON ORIGINAL SCALE  
DRAWING ADJUST  
SCALED DIMENSIONS  
IF THIS DOES NOT  
SCALE AT 1"

DRAWN BY: A. VELAZQUEZ  
DATE: 042505

DESIGNED BY: W. PETERSON  
R.C.E. NO. 67006 DATE: 042505

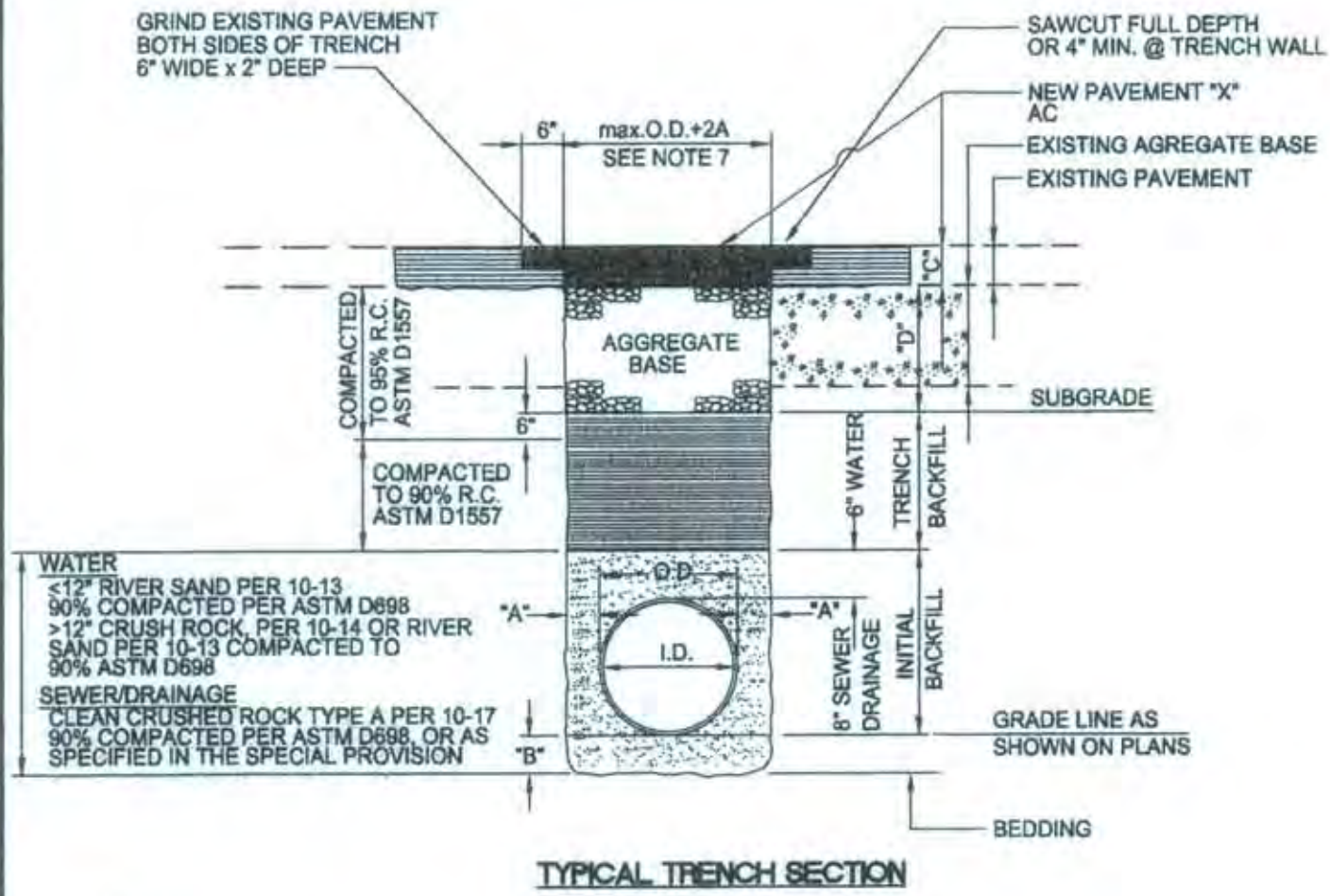
CHECKED BY: D. SHERRY  
R.C.E. NO. 53630 DATE: 042505

CITY OF SACRAMENTO  
DEPARTMENT OF UTILITIES

IMPROVEMENT PLANS FOR:  
WATER DISTRIBUTION IMPROVEMENTS  
3 MILLION GALLON ELKHORN RESERVOIR  
CMU WALL DETAILS 3

PLANNING NO. DWG. NO.  
PN: ZJ36 C-16  
WATER DWG. NO. SHEET  
615 GRID NO. 19  
J13 OF  
54





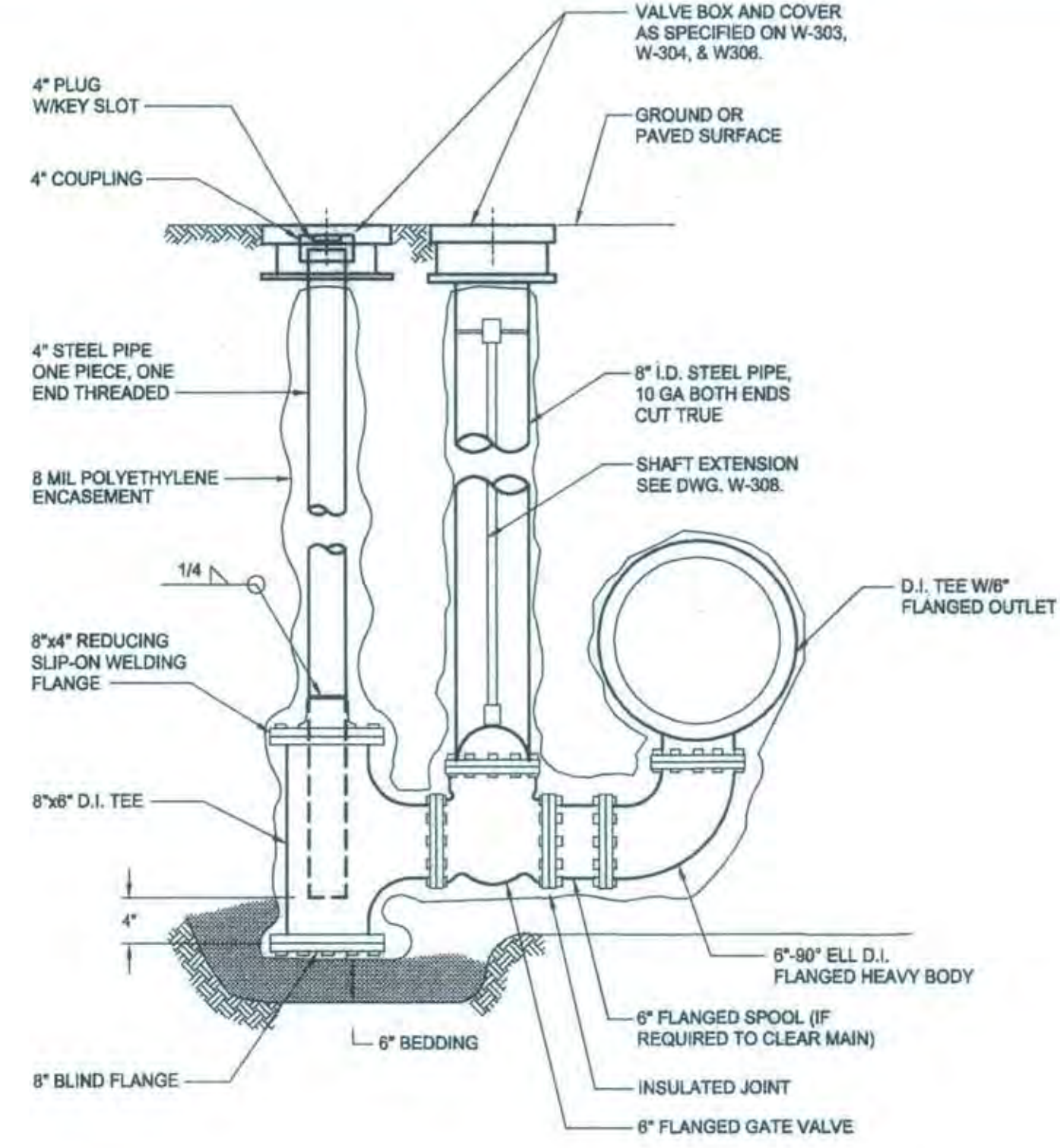
**NOTES:**

1. A PRIME COAT SHALL BE APPLIED TO AGGREGATE BASE PRIOR TO A.C. PAVING, STD. SPEC. 22-2
2. A TACK COAT OF ASPHALTIC EMULSION OR PAVING GRADE ASPHALT SHALL BE APPLIED TO EXISTING A.C. PAVEMENT AT ALL CONTACT SURFACES PRIOR TO PERMANENT A.C. PAVING, STD. SPEC. 22-2
3. PERMANENT PAVEMENT SHALL CONFORM IN QUALITY AND THICKNESS TO THE TYPE OF PAVEMENT REMOVED, BUT IN NO CASE SHALL BE LESS THAN FOUR INCHES (4") OF ASPHALTIC CONCRETE ON TWELVE INCHES (12") OF AGGREGATE BASE (A.B.)
4. EXISTING PAVEMENT SHALL BE SAWCUT AND REMOVED IN SUCH A MANNER SO AS NOT TO TEAR, BULGE OR DISPLACE ADJACENT PAVEMENT. EDGES SHALL BE CLEAN AND VERTICAL. ALL CUTS SHALL BE PARALLEL OR PERPENDICULAR TO STREET CENTERLINE, WHEN PRACTICAL.
5. ALL EXCAVATION AND BACKFILL SHALL CONFORM TO THE REQUIREMENTS OF THESE STANDARD SPECIFICATIONS.
6. R.C. - RELATIVE COMPACTION AS DETERMINED BY ASTM DESIGNATION D 1557 OR 606.
7. UNLESS OTHERWISE INDICATED ON PLANS OR IN PERMIT OR SPECIAL PROVISIONS.
8. NO SOLID BLOCKING PERMISSIBLE BENEATH PIPE.
9. IF TRENCH WALL IS OVER CUT OR SLOUGHS BEYOND "A" DIMENSION, BELOW LEVEL OF TOP OF PIPE, PLACE SELECT BACKFILL AS REQUIRED BY SPECIAL PROVISIONS.
10. JETTING BACKFILL IS NOT PERMITTED.

DIMENSION NAME	PIPE DIAMETER (INCHES)	DIMENSION (INCHES)
A (MIN. TRENCH CLEARANCE)	≤12 >12	8 10
B (MIN. BEDDING BELOW PIPE)	≤12 >12	3 6
C (MIN. A.C. PAVEMENT)	≤12 >12	4 5
D (MIN AB)	≤12 >12	12 20

W-1

TRENCH BACKFILL FOR WATER MAINS, GREATER THAN 16-INCH DIAMETER

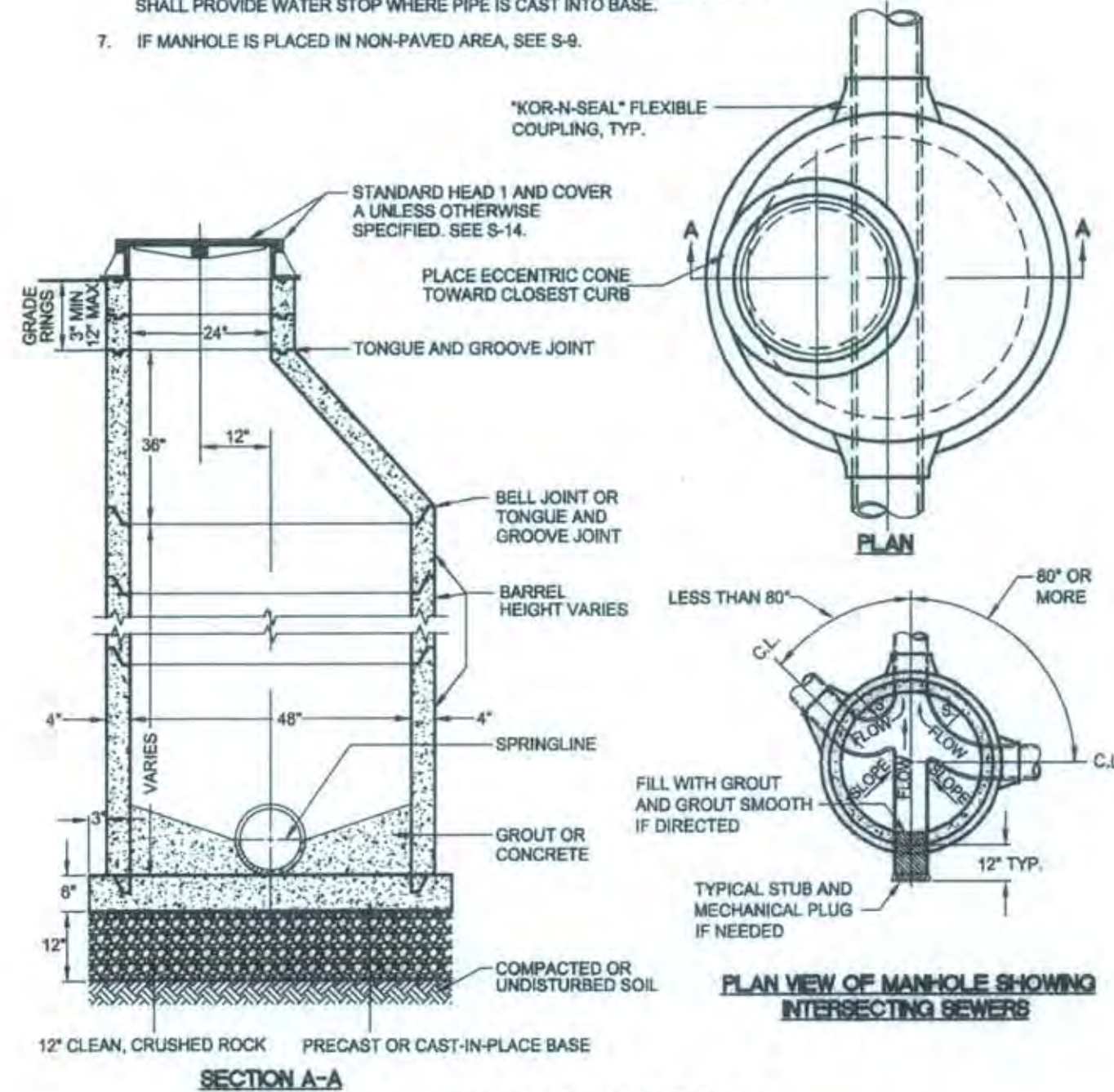


W-804

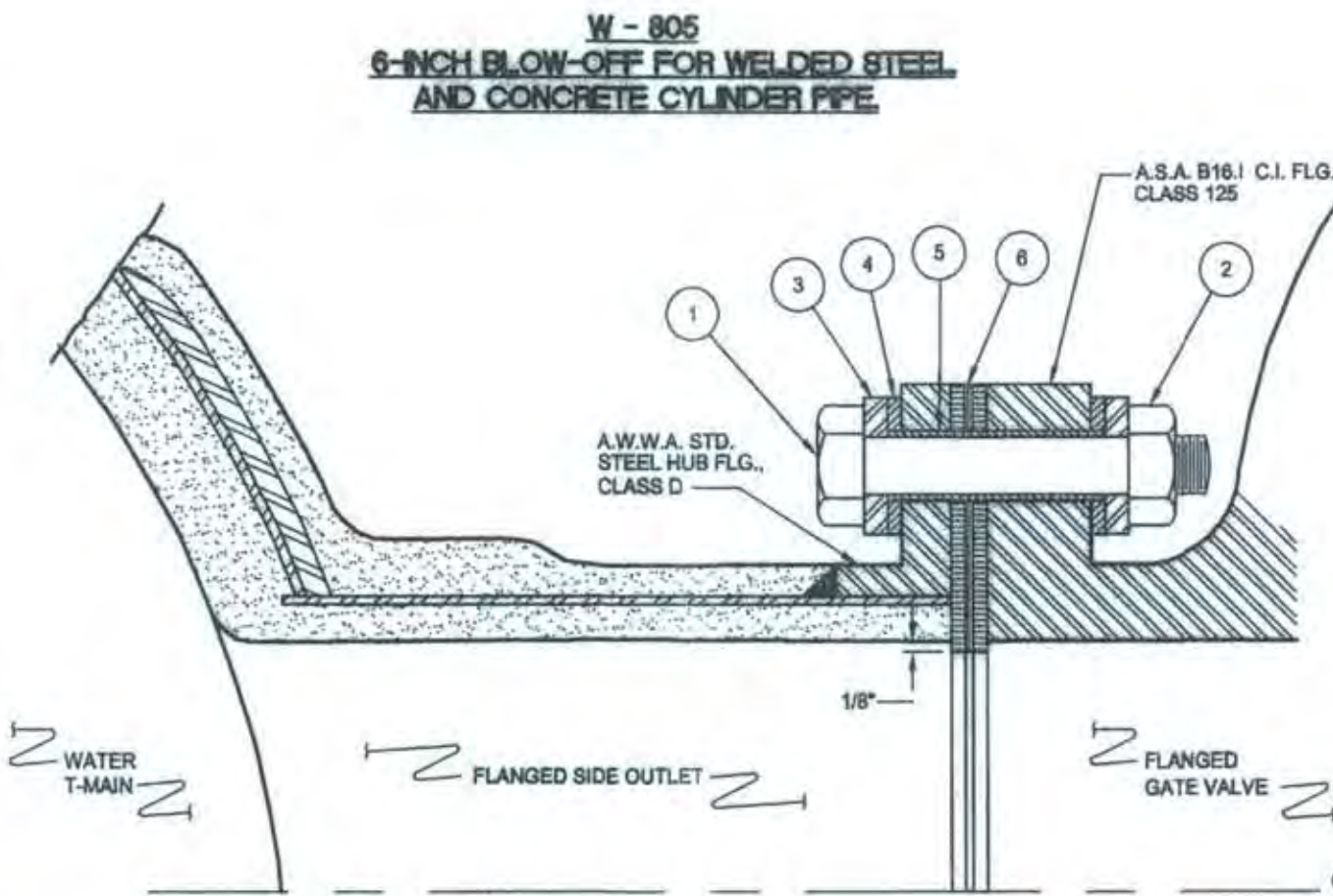
6-INCH BLOW-OFF FOR DUCTILE IRON PIPE

**NOTES:**

1. USE STANDARD MANHOLE 3A WHEN GREATER THAN 8 FEET DEEP, FOR SANITARY SEWER PIPES LESS THAN 21" DIA. AND FOR STORM DRAIN PIPE LESS THAN 21" DIA.
2. MANHOLES SHALL CONFORM TO SEC. 25 OF THE CITY STANDARD SPECIFICATIONS.
3. FLOWLINE MATERIAL FOR SEWER MAINS AND INTERSECTING MAINS SHALL BE VITRIFIED CLAY EXCEPT; IF MANHOLE BASE IS PRECAST CONCRETE, OR MANHOLE BASE IS PLACED OVER MAIN WHICH IS "LAID THROUGH", IN WHICH CASE FLOWLINE MATERIAL SHALL BE SAME AS MAIN.
4. FLOWLINE MATERIAL FOR STORM DRAIN PIPE SHALL BE THE SAME AS MAIN LINE PIPE WHEN "LAID THROUGH", OR GROUTED TO THE SPRINGLINE MATCHING THE EXISTING PIPE DIAMETER.
5. MANHOLE BENCH SHALL SLOPE UPWARDS FROM THE SPRING-LINE OF THE PIPE TO THE PROJECTED LEVEL OF THE CROWN OF THE PIPE AT THE MANHOLE WALL OR 12 INCHES ABOVE THE SPRING-LINE, WHICHEVER IS LESS.
6. CORE OPENING AND USE "KOR-N-SEAL" OR APPROVED EQUAL FLEXIBLE COUPLINGS ON ALL CONNECTIONS TO MANHOLE EXCEPT IF PIPE IS "LAID THROUGH" AND CAST INTO BASE. IF PIPE IS "LAID THROUGH", CONTRACTOR SHALL PROVIDE WATER STOP WHERE PIPE IS CAST INTO BASE.
7. IF MANHOLE IS PLACED IN NON-PAVED AREA, SEE S-9.



STANDARD MANHOLE No. 3A



W-805

6-INCH BLOW-OFF FOR WELDED STEEL AND CONCRETE CYLINDER PIPE

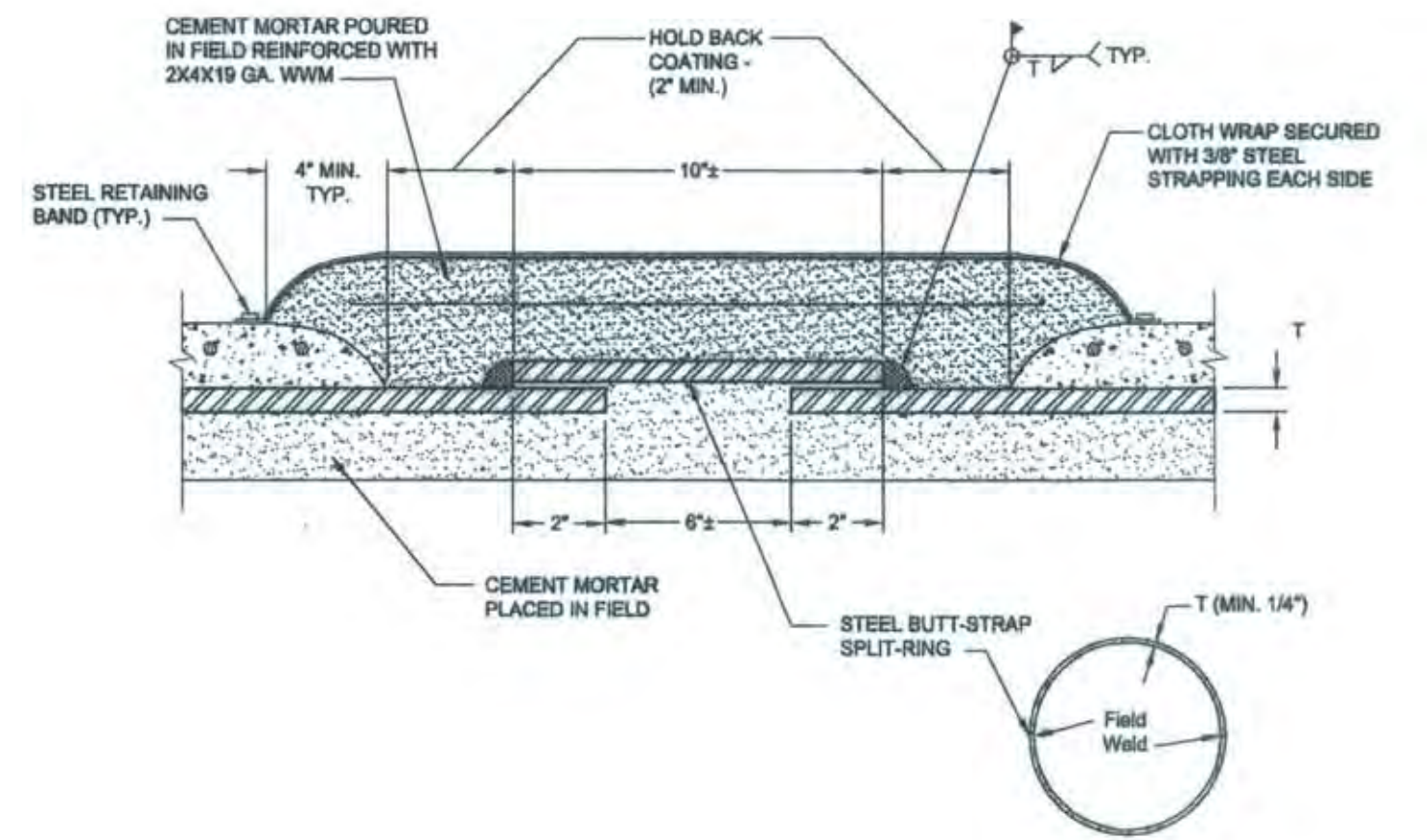
ITEM	DESCRIPTION	NOMINAL SIZE (IN.)			
		6	8	10	12
1.	HEX HEAD BOLT, AM. STD. N.C. THREAD PER ASTM A370, GRADE B	QUANTITY 8	8	10	12
		DIAMETER 3/4	3/4	7/8	7/8
		MIN. LENGTH 3 1/2	3 3/4	4	4
2.	HEX NUT, PER ASTM A563, GRADE C, SEMI-FINISHED AM. STD. HEAVY SERIES, SIZE AND THREAD TO FIT HEX HEAD BOLT.	QUANTITY 8	8	12	12
3.	STEEL WASHER, 1/4" THICK, ROUND, FACES TO BE FLAT AND PARALLEL, STAINLESS STEEL.	QUANTITY 16	16	24	24
		O. DIAMETER 1 9/16	1 9/16	1 3/4	1 3/4
		I. DIAMETER 13/16	13/16	15/16	15/16
4.	INSULATING WASHER, 1/8" THICK, FABRIC REINFORCED BAKELITE, SLIP FIT OVER SLEEVE.	QUANTITY 16	16	24	24
		O. DIAMETER 1 9/16	1 9/16	1 3/4	1 3/4
		I. DIAMETER 13/16	13/16	15/16	15/16
5.	INSULATING SLEEVE, 1/32" WALL THICKNESS FABRIC REINFORCED BAKELITE.	QUANTITY 8	8	12	12
		I. DIAMETER 3/4	3/4	7/8	7/8
		LENGTH 11	13 1/2	16	19
6.	INSULATING GASKET, 1/8" THICK, MICARTA, FULL FACE, AM. STD. CLASS 150 FLANGE DRILLING, NEOPRENE FACED.	O. DIAMETER 11	13 1/2	16	19
		I. DIAMETER 10	12 1/2	14	16

**NOTES:**

1. VALVE AND FLANGE TO BE WRAPPED WITH 8 MIL POLYETHYLENE ENCASEMENT, AFTER ASSEMBLY.
2. RESISTANCE ACROSS FLANGE TO BE 50,000 OHMS OR HIGHER.
3. COMPONENTS ARE FOR 150 P.S.I. CLASS.

W-802

FLANGE INSULATOR THRU 12-INCH PIPE

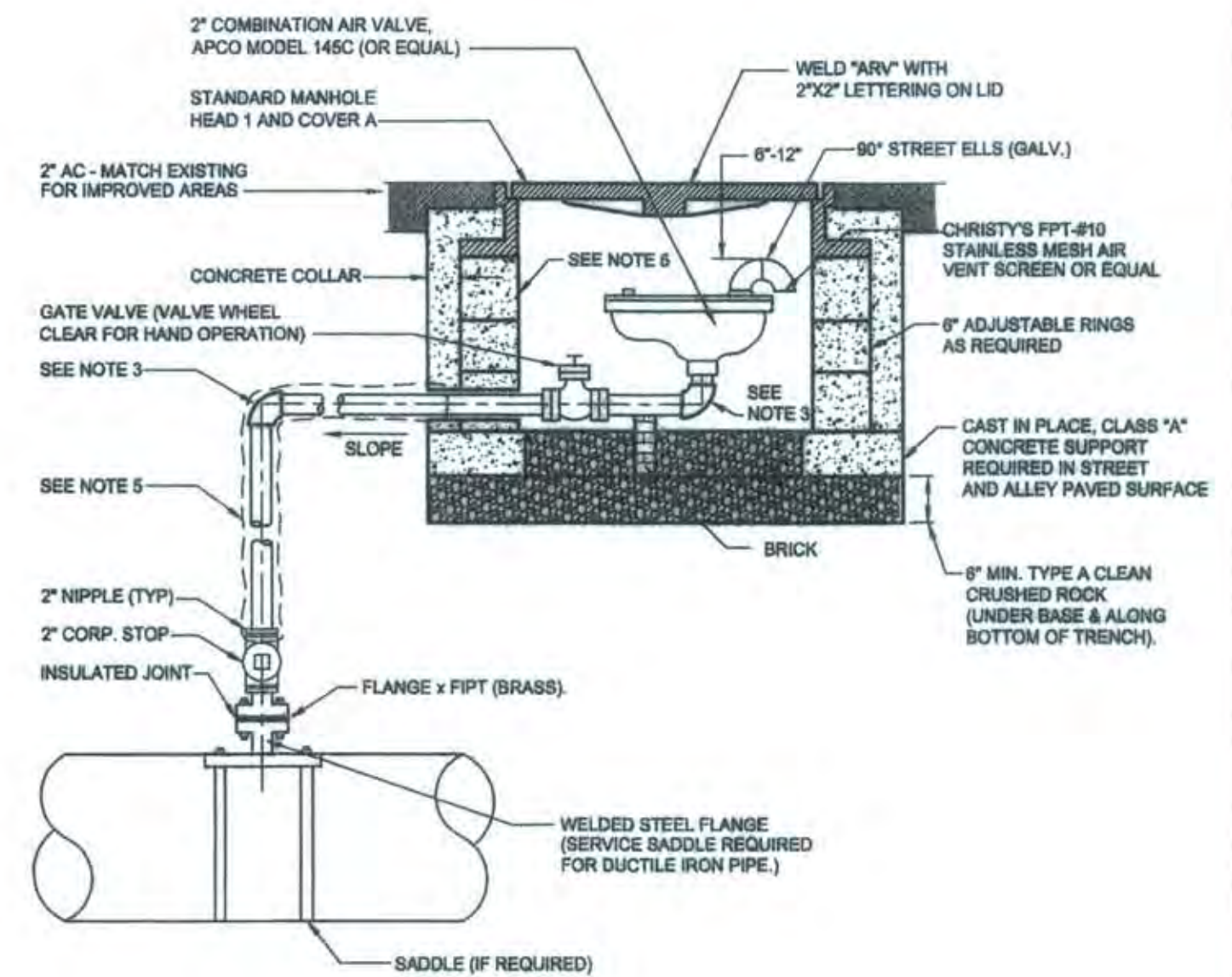


**NOTES:**

1. WALL THICKNESS "T" SHALL BE DETERMINED BY THE PIPE MANUFACTURER. THE DESIGN OF CLP SHALL CONFORM TO SECTION 10.

W-804

FIELD WELDED BUTT-STRAP JOINT



**NOTES:**

1. LOWERING ADJUSTMENT OF EXISTING AIR VALVE INSTALLATION WILL REQUIRE INSTALLATION OF NEW FACILITY.
2. MAINTAIN A GRADE UPWARD FROM CORP. STOP TO AIR VALVE. (NO TRAPS)
3. FLARE OR SOLDER JOINT COPPER FITTINGS ARE ACCEPTABLE, OR COMPRESSION TYPE FITTINGS.
4. PIPE SHALL BE COPPER, TYPE "K".
5. 6 MIL POLYETHYLENE ENCASEMENT WITH 10 TAPE IS REQUIRED FOR ALL UNDERGROUND COPPER TUBING.
6. PRECAST SECTIONS SHALL BE INSTALLED PER SECTION 25.

W-802

2-INCH AIR VACUUM AND AIR RELEASE VALVE INSTALLATION



PROJECT NAME: ZJB6 ELKHORN RESERVOIR  
CAD FILE: W-802PROJ.ZJB6 ELKHORN RESERVOIR.dwg CD-1

REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK ELEV. 15.829  
DESCRIPTION: BM257-B3B  
SAC COUNTY BM 1A-43 DISK IN  
BRIDGE (E) OF ELKHORN BLVD. &  
NATOMAS BLVD. (S) SIDE OF  
ELKHORN BLVD.

FIELD BOOK  
1448  
SCALE:  
ON ORIGINAL SCALE  
DRAWING ADJUST  
SCALED DIMENSIONS  
IF THIS DOES NOT  
SCALE AT 1"

1"  
DRAWN BY: A. VELAZQUEZ  
DATE: 042505  
DESIGNED BY: W. PETERSON  
R.C.E. NO. 67006, DATE 042505  
CHECKED BY: D. SHERRY  
R.C.E. NO. 33638, DATE 042505

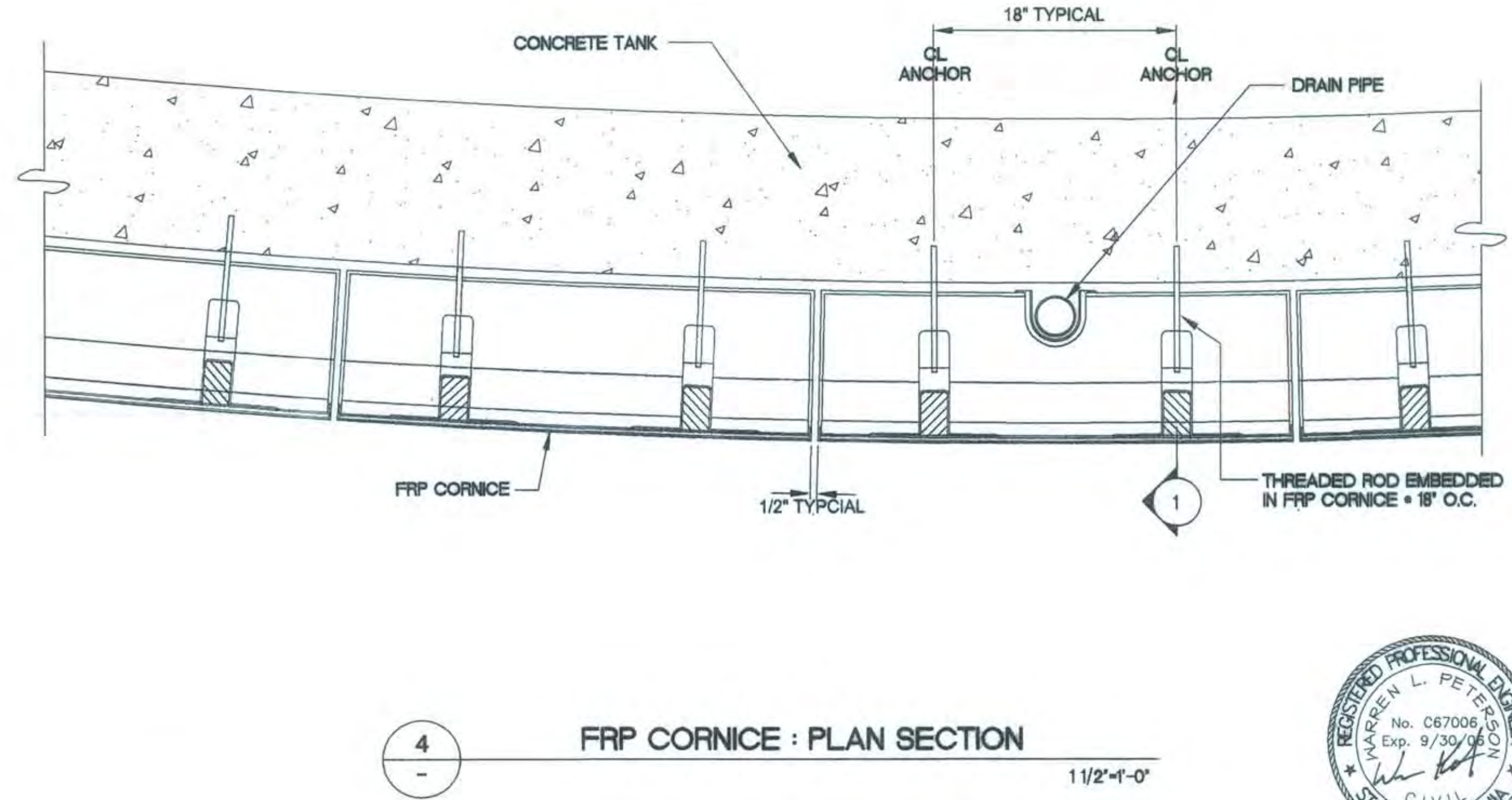
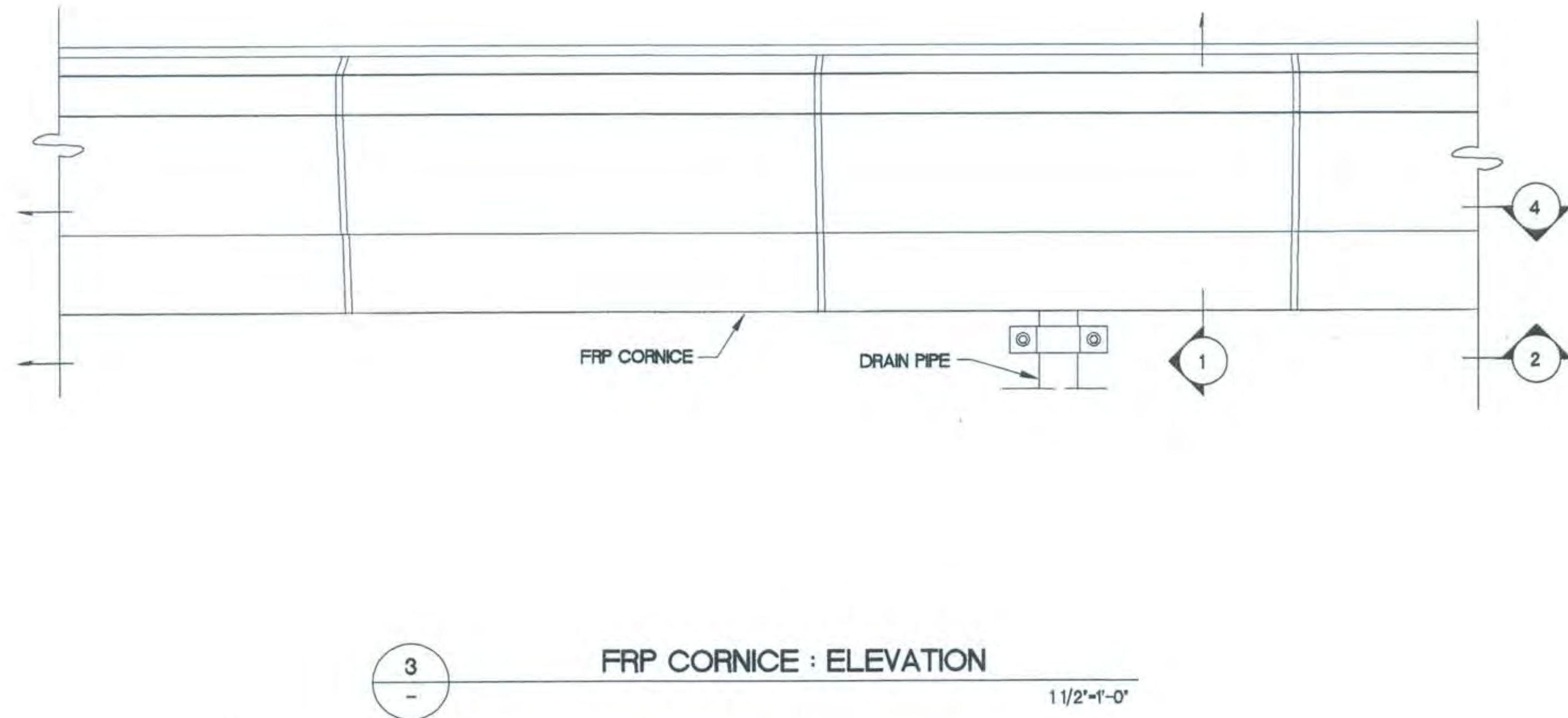
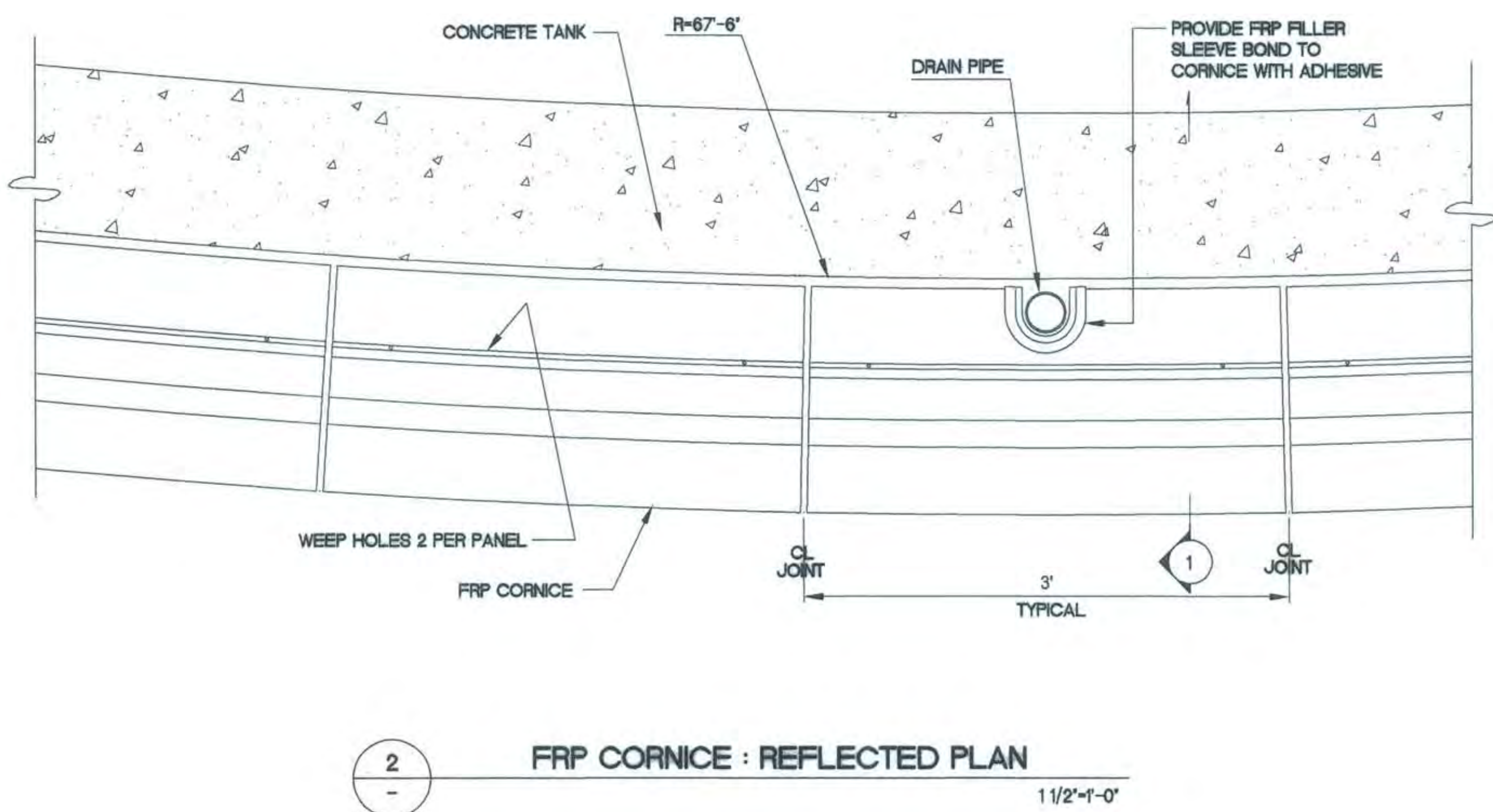
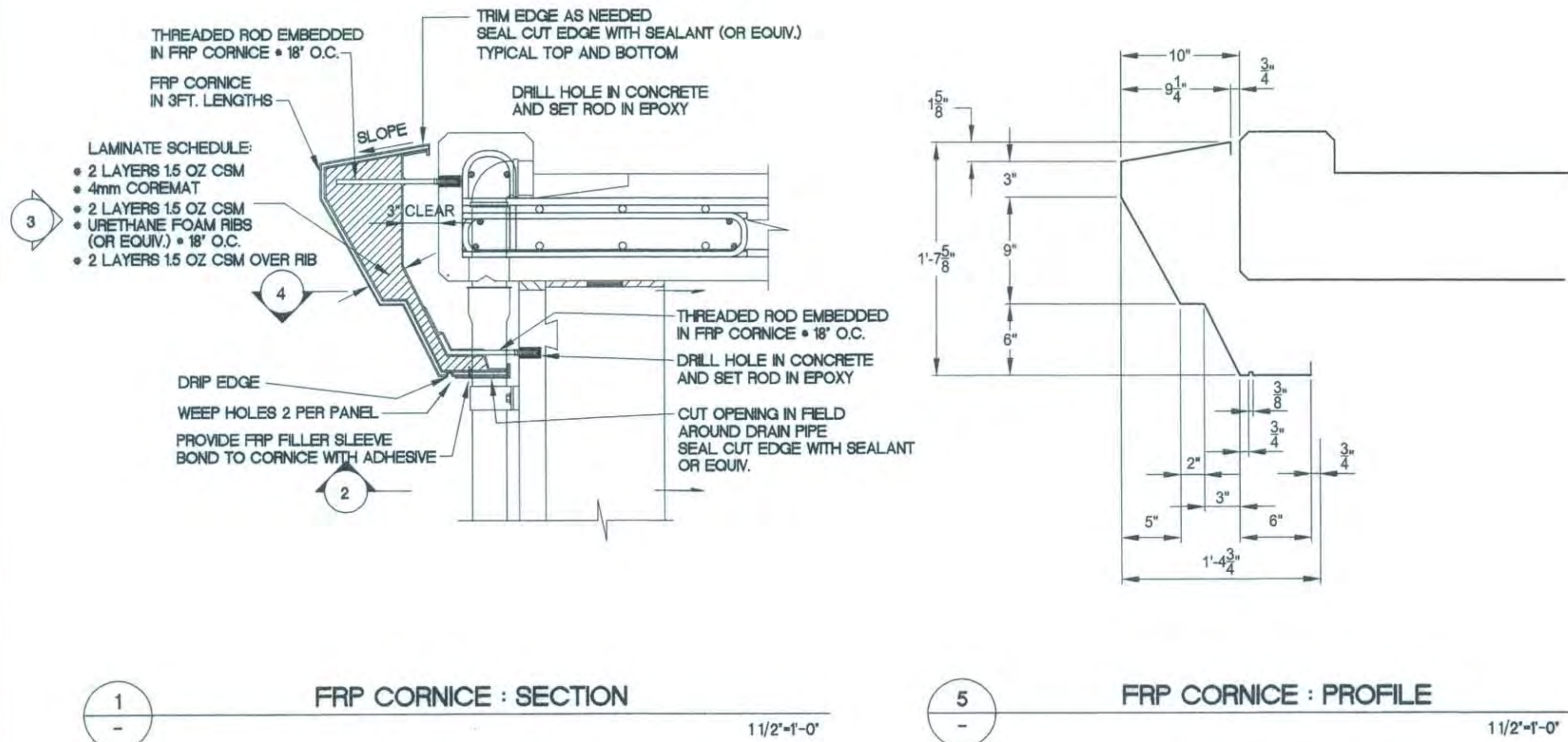
**CITY OF SACRAMENTO**  
DEPARTMENT OF UTILITIES  
IMPROVEMENT PLANS FOR:  
**WATER DISTRIBUTION IMPROVEMENTS**  
**3 MILLION GALLON ELKHORN RESERVOIR**  
**PIPE LINE DETAILS**

PLANNING NO. **PN: ZJ36**  
WATER DWS NO. **WATER DWS NO.**  
GIS GRID NO. **J13**  
DWS NO. **CD-1**  
SHEET **20**  
OF **54**









PROJECT NAME: ZJ36 ELKHORN RESERVOIR  
CAD FILE: \SDSKPROJ\ZJ36 ELKHORN RESERVOIR\dwg

PN: ZJ36	REVISIONS				BENCH MARK ELEV. 15.829 DESCRIPTION: BM251-B3B SAC COUNTY BM 1A-43 DISK IN BRIDGE (E) OF ELKHORN BLVD. # NATOMAS BLVD. (S) SIDE OF ELKHORN BLVD.	FIELD BOOK 1448 SCALE: ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"		CITY OF SACRAMENTO DEPARTMENT OF UTILITIES			IMPROVEMENT PLANS FOR: ELKHORN RESERVOIR RESERVOIR CORNICE DETAILS			PLANNING NO.	DWG. NO.
	NO.	DESCRIPTION	DATE	BY											
								DRAWN BY: A. VELAZQUEZ DATE: 042505	DESIGNED BY: K. PETERSON R.C.E. NO. 61006 DATE: 042505	CHECKED BY: D. SHERRY R.C.E. NO. 53638 DATE: 042505			PN: ZJ36	A-1	
														WATER DWG NO.	SHEET
														615 GRID NO.	22
															OF
															54



- (S-1) —DRAWING INDEX, GENERAL NOTES
- (S-2) —MAT SLAB/PILES PLAN AND DETAILS
- (S-3) —TANK PLANS AND SECTION
- (S-4) —TYPICAL WALL SECTION AND DETAILS
- (S-5) —PRESTRESSING NOTES AND MISCELLANEOUS DETAILS
- (S-6) —ROOF REINFORCEMENT PLANS AND DETAILS
- (S-7) —MAT SLAB, COLUMN AND DOWNSPOUT DETAILS
- (S-8) —PIPE ENTRANCE DETAILS
- (S-9) —INTERIOR LADDER AND HATCH DETAILS
- (S-10) —EXTERIOR LADDER AND ROOF VENT DETAILS
- (S-11) —HANDRAIL DETAILS

DRAWING INDEX



DETAIL LEGEND

- C — CENTERLINE  
Ø — DIAMETER  
@ — AT  
CLR — CLEAR  
DI — DUCTILE IRON  
DWG — DRAWING  
EF — EACH FACE  
EW — EACH WAY  
EL — ELEVATION  
FF — FINISHED FLOOR  
FG — FINISHED GRADE  
HP — HIGH POINT  
IE — INVERT ELEVATION
- LP — LOW POINT  
MAX — MAXIMUM  
MIN — MINIMUM  
OC — ON CENTER  
SCH — SCHEDULE  
SST — STAINLESS STEEL  
SYM — SYMMETRICAL  
TOF — TOP OF FLOOR  
TOW — TOP OF WALL  
TYP — TYPICAL  
UNO — UNLESS NOTED OTHERWISE

ABBREVIATION LEGEND

GENERAL NOTES:

- I. DESIGN LOADS
1. SUPERIMPOSED ROOF LOAD : 100.0 PSF LIVE + 10.00 PSF DEAD
2. LIQUID (WATER) : 62.5 PCF
3. EFFECTIVE SEISMIC ACCELERATIONS : 0.2500g (H), 0.1719g (V)
4. HORIZONTAL SEISMIC VELOCITY : 1.500 FT/SEC AT 7.699 SEC PERIOD AND 1/2% DAMPING
5. BACKFILL HEIGHT : 1'-0" (MAX) ABOVE MAT SLAB  
0'-0" (MIN) ABOVE MAT SLAB
- II. BUCKLING CRITERIA OF WALL DESIGN
1. THE INTEGRITY OF THE WALL SHOWN ON THESE DRAWINGS IS STRICTLY PREDICATED ON THE FOLLOWING CONDITIONS:
- A. THE STRICT CONFORMANCE TO THE CLOSE STRESS-TOLERANCE AND OTHER REQUIREMENTS OF THE CIRCUMFERENTIAL PRESTRESSING APPLICATION INDICATED IN THE CIRCUMFERENTIAL PRESTRESSING NOTES ON DRAWING S-5 AND ON OTHER PARTS OF THESE DRAWINGS AND IN THE TECHNICAL SPECIFICATIONS.
- B. SEE SPECIFICATIONS FOR OUT OF ROUND TOLERANCE.
- C. THERE SHALL BE NO BLOCK-OUTS OR OTHER TYPES OF WALL OPENINGS OTHER THAN THOSE SHOWN ON THESE DRAWINGS.
- III. CONCRETE REQUIREMENTS
1. MAT SLAB AND PIPE ENCASEMENTS : 4000 PSI
2. ROOF SLAB AND COLUMNS : 4000 PSI
2. COREWALL : 4500 PSI
4. SHOTCRETE : 4500 PSI (1C:3S)
5. ALL CONCRETE SHALL HAVE 6.0 SK/CY (MIN) AND A MAX WATER CEMENT RATIO OF 0.42.
6. SEE TECHNICAL SPECIFICATION FOR COMPLETE MIX DESIGN INFORMATION INCLUDING AGGREGATE SIZE AND ACCEPTABLE ADMIXTURES.
7. SEE TECHNICAL SPECIFICATION FOR CONCRETE PLACING AND FORMING PROCEDURES.
- IV. REINFORCEMENT REQUIREMENTS
1. ALL REINFORCING IN TANK SHALL CONFORM TO ASTM A615 GRADE 60 UNLESS OTHERWISE NOTED ON THESE DRAWINGS.
2. REINFORCING STEEL CALLED OUT AS GALVANIZED SHALL HAVE A CLASS 1 COATING IN ACCORDANCE WITH ASTM A767.
- V. EARTHWORK REQUIREMENTS
1. MINIMUM COMPACTION OF AGGREGATE BASE AND SUBGRADE UNDER AND AROUND PIPE BLOCKS AND UNDER FLOOR AND FOOTINGS SHALL EQUAL 95% OF MAX DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D1557.
2. MINIMUM COMPACTION OF BACKFILL AROUND TANK SHALL EQUAL 90% OF MAX DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D1557. USE ONLY HAND HELD COMPACTION EQUIPMENT WITHIN 3' OF TANK WALL AND LIGHTWEIGHT EQUIPMENT BEYOND THE 3' SO AS NOT TO DAMAGE THE WALL. BRING UP THE BACKFILL AROUND THE TANK IN UNIFORM LIFTS. IF THE TANK IS EMPTY DURING THE BACKFILLING OPERATION AROUND THE TANK, THE INWARD MOVEMENT OF THE COREWALL MUST BE MONITORED AT VARIOUS LOCATIONS AROUND THE INSIDE CIRCUMFERENCE TO INSURE THAT A UNIFORM BACKFILL IS BEING ACHIEVED.
3. SEE CIVIL DRAWINGS AND TECHNICAL SPECIFICATIONS FOR COMPLETE REQUIREMENTS.
- VI. APPURTENANCE NOTES
1. WHERE APPURTENANCES REQUIRE ANCHORS TO BE PLACED IN THE WALL EXTERIOR, DRILL AND PLACE AFTER WRAPPING AND BEFORE FINAL SHOTCRETING. TAKE EXTREME CARE TO AVOID DAMAGING THE PRESTRESSING STRAND. PLACE A STEEL PIPE AROUND THE DRILL BIT TO KEEP THE DRILL BIT FROM COMING IN CONTACT WITH THE STRAND. INSTALL INSERTS BEFORE SHOTCRETING TO MARK HOLE LOCATION. FOR ALL TYPES OF ANCHORING SYSTEMS, INCLUDING DROP-IN AND EXPANSION WEDGE ANCHORS, FILL HOLE IN SHOTCRETE AND WALL WITH EPOXY BEFORE FINAL INSTALLATION OF ANCHORS TO INSURE COMPLETE COVERAGE AND PROTECTION OF THE STRAND.
2. ADHESIVE ANCHORS WITH 1 INCH MAXIMUM EMBEDMENT INTO THE SHOTCRETE MAY ONLY BE USED IN NON-STRUCTURAL APPLICATIONS AND WHEN APPROVED BY THE ENGINEER. WHEN DRILLING HOLES IN THE SHOTCRETE, THE DRILL MUST BE EQUIPPED WITH A POSITIVE STOP TO PREVENT DRILLING MORE THAN 1 INCH IN DEPTH. USE EPOXY ADHESIVE ANCHORS ONLY. THE HOLE SHALL BE COMPLETELY FILLED WITH EPOXY TO INSURE COMPLETE COVERAGE AND PROTECTION OF THE STRAND. DO NOT USE EXPANSION OR DROP-IN ANCHORS.
3. USE SST 316 BOLTS AND ANCHORS UNLESS NOTED OTHERWISE. WHERE SST BOLTS OR ANCHORS ARE IN CONTACT WITH DISSIMILAR METALS, USE INSULATING SLEEVES AND PHENOLIC WASHERS TO ELECTRICALLY ISOLATE THE BOLTS.
- VII. SPECIAL INSPECTION
1. SPECIAL INSPECTIONS IS REQUIRED FOR THIS PROJECT AND SHALL BE PERFORMED IN ACCORDANCE WITH THE 2001 CALIFORNIA BUILDING CODE (CBC), CHAPTER 17. SPECIAL INSPECTIONS SHALL BE PERFORMED BY A REGISTERED DEPUTY INSPECTOR EMPLOYED BY THE OWNER IN THESE CATEGORIES:
- CONCRETE PLACEMENT, STRUCTURAL WELDING, CONCRETE ANCHORS, REINFORCING STEEL PLACEMENT, GRADING, EXCAVATION, FILL PLACEMENT, AND PRESTRESSING
2. ALL PILE DRIVING SHALL BE OBSERVED BY THE OWNER'S GEOTECHNICAL ENGINEER.
- VIII. STRUCTURAL OBSERVATION
1. THE DESIGN ENGINEER, OR ANOTHER ENGINEER DESIGNATED BY THE DESIGN ENGINEER SHALL PERFORM STRUCTURAL OBSERVATION AS REQUIRED BY CBC SECTION 1702, AND AS DEFINED BY SECTION 220. STRUCTURAL OBSERVATION SHALL BE PROVIDED DURING THE STAGES OF CONSTRUCTION LISTED BELOW. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE AT LEAST 72 HOURS ADVANCE NOTICE TO THE DESIGN ENGINEER WHEN HIS WORK IS READY FOR STRUCTURAL OBSERVATION FOR EACH OF THESE STAGES:
- PILE DRIVING, FIRST MAT SLAB POUR, FIRST ROOF POUR, FIRST WALL POUR, FIRST COLUMN POUR, PRESTRESSING



PN: ZJ36	REVISIONS			BENCHMARK ELEV. 15.829 DESCRIPTION: BM257-B3B SAC COUNTY BM 1A-43 DISK IN BRIDGE (B) OF ELKHORN BLVD. 1. NATOMAS BLVD. (S) SIDE OF ELKHORN BLVD.	FIELD BOOK 1448 SCALE: 1"=10' ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"	CITY OF SACRAMENTO DEPARTMENT OF UTILITIES	Richard Brady & Associates Civil Engineers and Construction Managers 1000 North Lincoln Blvd. Suite 100 Sacramento, CA 95811 Tel: 916.441.1000 Fax: 916.441.1005	IMPROVEMENT PLANS FOR: <b>WATER DISTRIBUTION IMPROVEMENTS 3 MILLION GALLON ELKHORN RESERVOIR DRAWING INDEX, GENERAL NOTES</b>	PLANNING NO.	DWG. NO.
									PN: ZJ36	S-1
									WATER DWG. NO.	24
									OF	
									GIS GRID NO. J13	54



CC: ZJ36 ELKHORN RESERVOIR



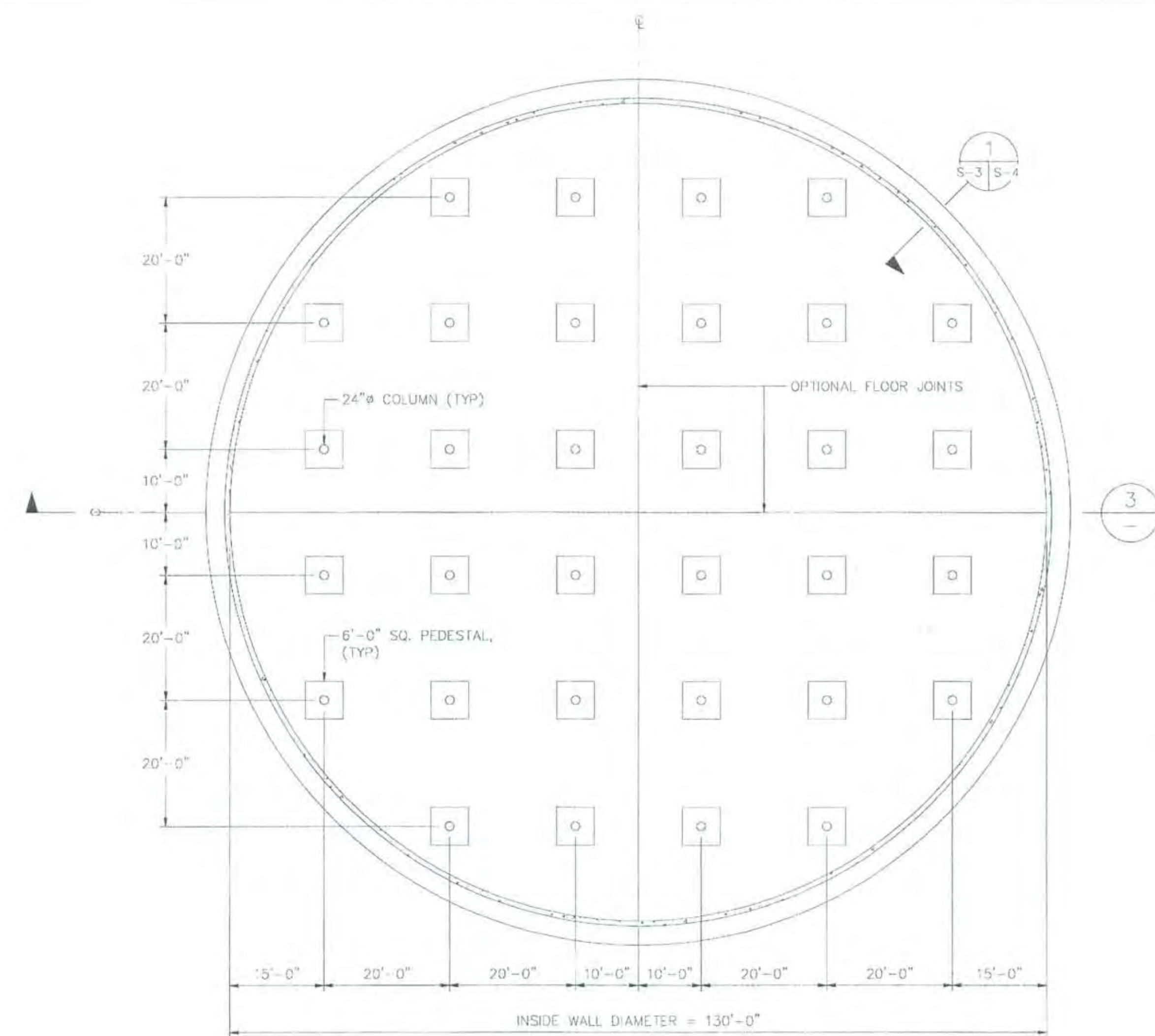


1. AN INDICATOR PILE PROGRAM MUST BE PERFORMED FOR DETERMINING PRODUCTION PILE LENGTHS. A MINIMUM OF THREE INDICATOR PILES SHALL BE DRIVEN. A PILE DRIVING ANALYZER SHALL BE USED DURING DRIVING OF INDICATOR PILES.
2. INDICATOR PILE LENGTHS AND LOCATIONS SHALL BE DETERMINED BY THE OWNER'S GEOTECHNICAL ENGINEER.
3. PRODUCTION PILE LENGTHS SHALL BE DETERMINED BY OWNER'S GEOTECHNICAL ENGINEER BASED ON THE RESULTS OF THE INDICATOR PILE PROGRAM.
4. A SINGLE ACTING DIESEL HAMMER WITH A MINIMUM RATED ENERGY OF 50,000 FOOT-POUNDS PER BLOW SHALL BE USED FOR DRIVING OF ALL PILES. USE FIXED LEADS FOR PROPER ALIGNMENT DURING DRIVING OF ALL PILES.
5. THE SAME PILE DRIVING EQUIPMENT SHALL BE USED FOR DRIVING INDICATOR PILES AND PRODUCTION PILES.
6. ALL PILE DRIVING SHALL BE OBSERVED BY THE OWNER'S GEOTECHNICAL ENGINEER.

REGISTERED PROFESSIONAL  
R. L. BIGGERS  
R. L. Biggers  
No. 1825  
Exp. 6-30-07  
STRUCTURAL  
STATE OF CALIFORNIA

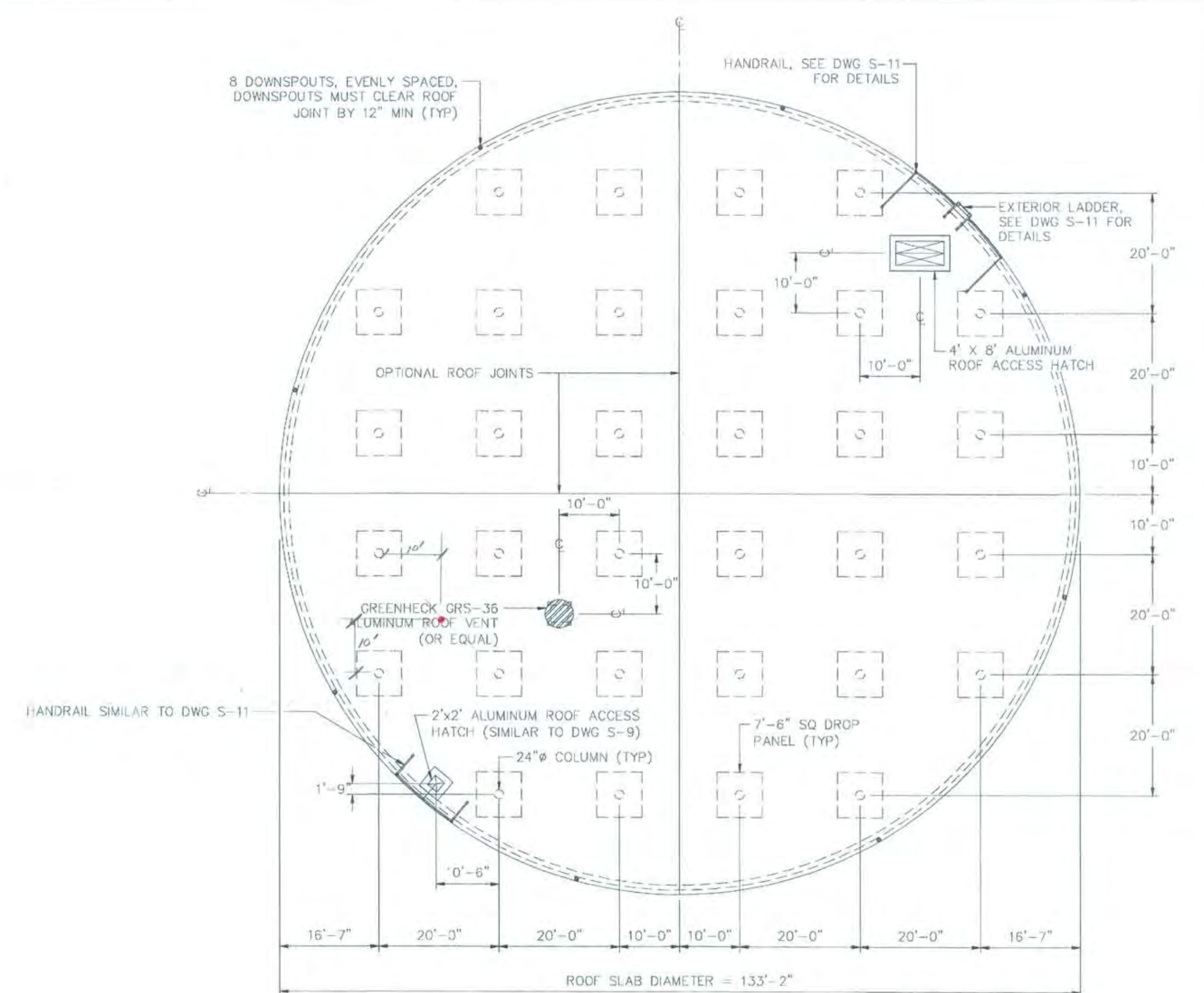
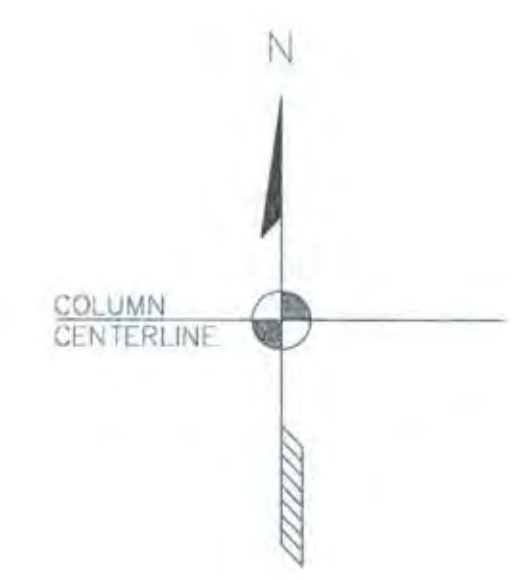
PN: ZJ36	REVISIONS				BENCHMARK ELEV. 15.829 DESCRIPTION: BM25T-B3B SAC COUNTY BM 1A-43 DISK IN BRIDGE (E) OF ELKHORN BLVD. & NATOMAS BLVD. (S) SIDE OF ELKHORN BLVD.	FIELD BOOK 1448 SCALE: _____ ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"	 1"	 CITY OF SACRAMENTO DEPARTMENT OF UTILITIES	<i>Richard Brady &amp; Associates</i> Civil Engineers and Construction Managers 4801 Highway 99, Suite 200 Sacramento, CA 95811 Tel: 916.441.0001 Fax: 916.441.0002	IMPROVEMENT PLANS FOR:  WATER DISTRIBUTION IMPROVEMENTS 3 MILLION GALLON ELKHORN RESERVOIR MAT SLAB/PILES PLAN AND DETAILS	PLANNING NO. _____ PN: ZJ36 WATER DWG NO. _____ GIS GRID NO. 113	DWG. NO. 3-2 SHEET 25 OF 54
	NO.	DESCRIPTION	DATE	BY								



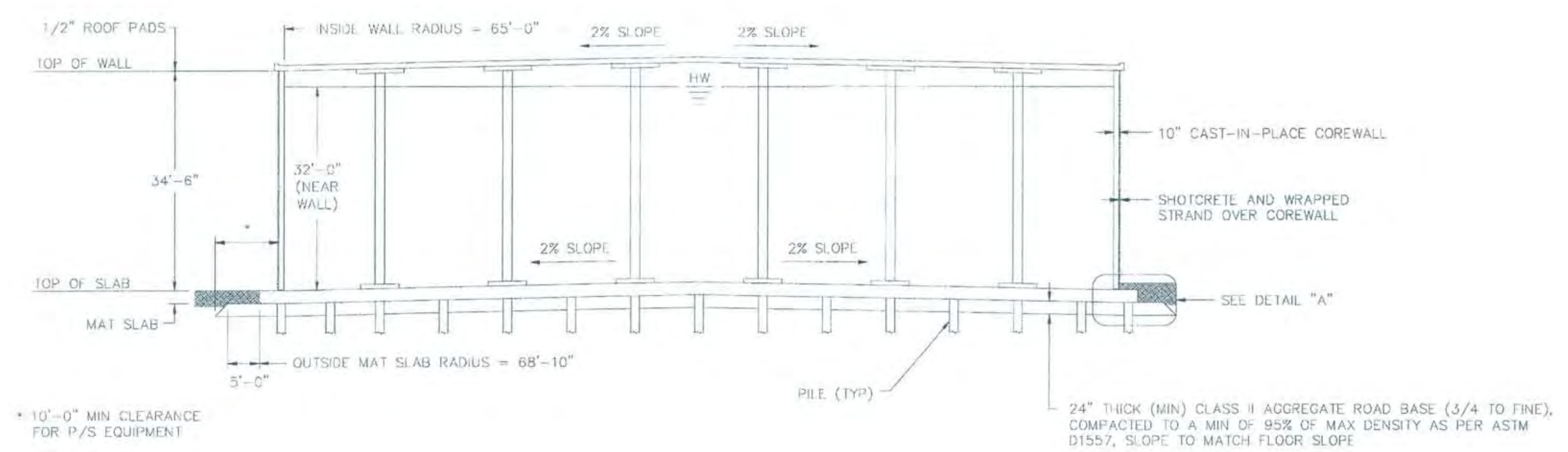


NOTE:  
SEE CIVIL DRAWINGS FOR PIPE  
MATERIAL TYPE, LAYOUT AND  
PIPE CONTINUATION

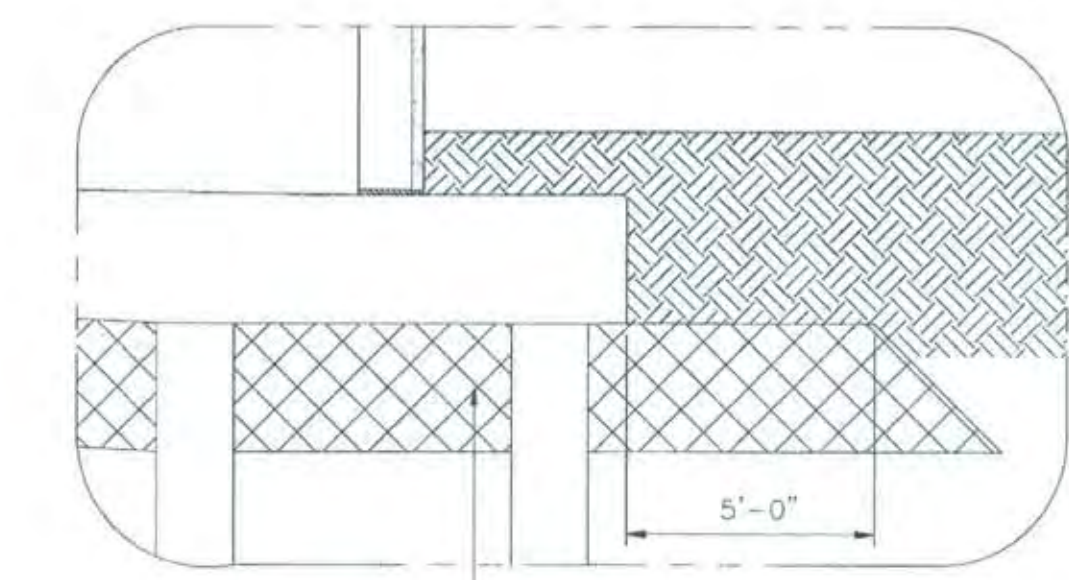
FLOOR PLAN 1



ROOF PLAN 2



SECTION 3



DETAIL A

PN: ZJ36	REVISIONS				BENCHMARK ELEV. 15.829 DESCRIPTION: BM257-B3B SAC COUNTY BM 1A-43 DISK IN BRIDGE (E) OF ELKHORN BLVD. 4 NATOMAS BLVD. (S) SIDE OF ELKHORN BLVD.	FIELD BOOK 1448	1"	CITY OF SACRAMENTO DEPARTMENT OF UTILITIES				Richard Brady & Associates Civil Engineers and Construction Managers 4801 Northgate Center Blvd. Suite 100 Sacramento, California 95833 Telephone 916.485.0500 Fax 916.485.0500	IMPROVEMENT PLANS FOR:		PLANNING NO. PN: ZJ36 WATER DWG NO. GIS GRID NO. J13	DWG. NO. S-3 SHEET 26 OF 54
	NO.	DESCRIPTION	DATE	BY				DRAWN BY: SDF	DESIGNED BY: RLB	CHECKED BY: MVB	WATER DISTRIBUTION IMPROVEMENTS					
								DATE: AUGUST 26, 2005	R.C.E. NO. 18330 DATE: 8/26/05	R.C.E. NO. 66993 DATE: 8/26/05	3 MILLION GALLON ELKHORN RESERVOIR					
											TANK PLANS AND SECTION					



CC: ZJ36 ELKHORN RESERVOIR

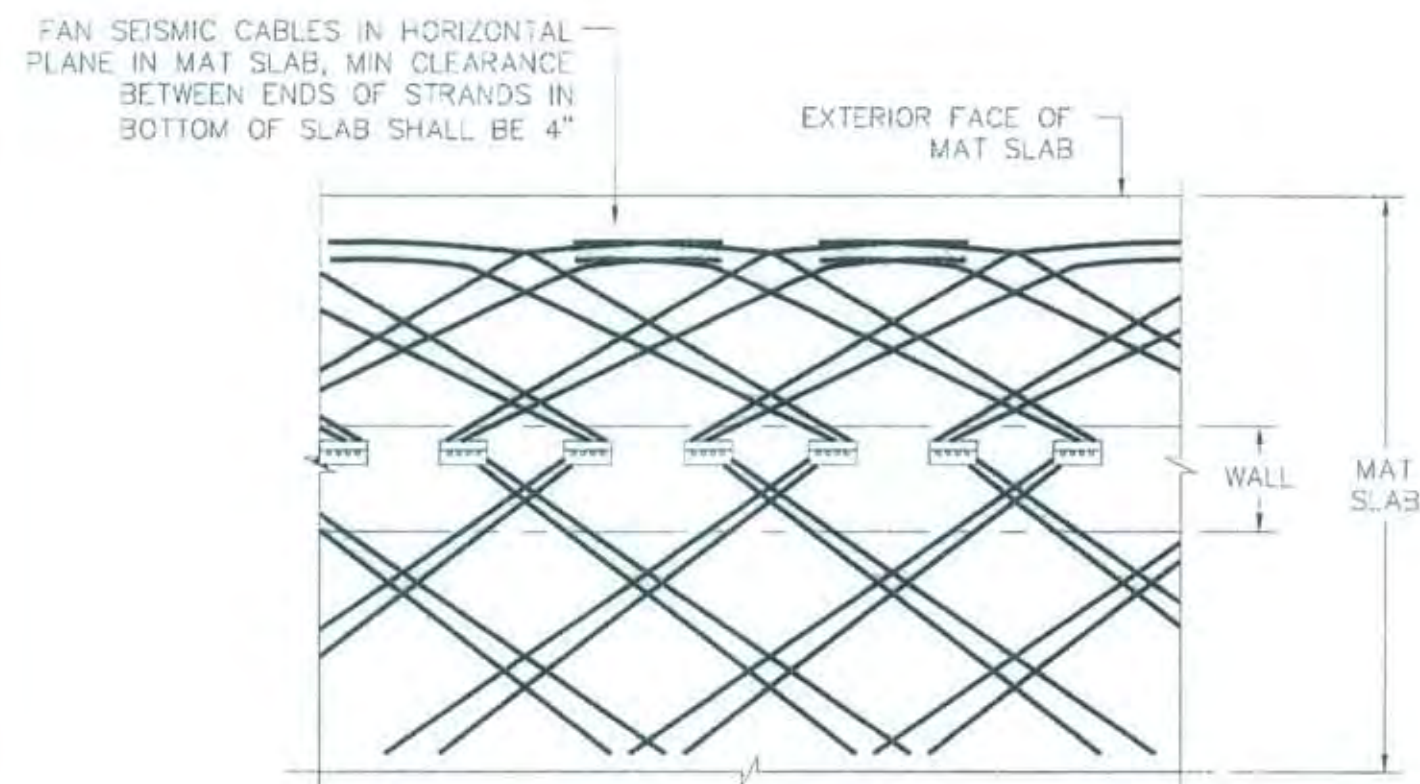






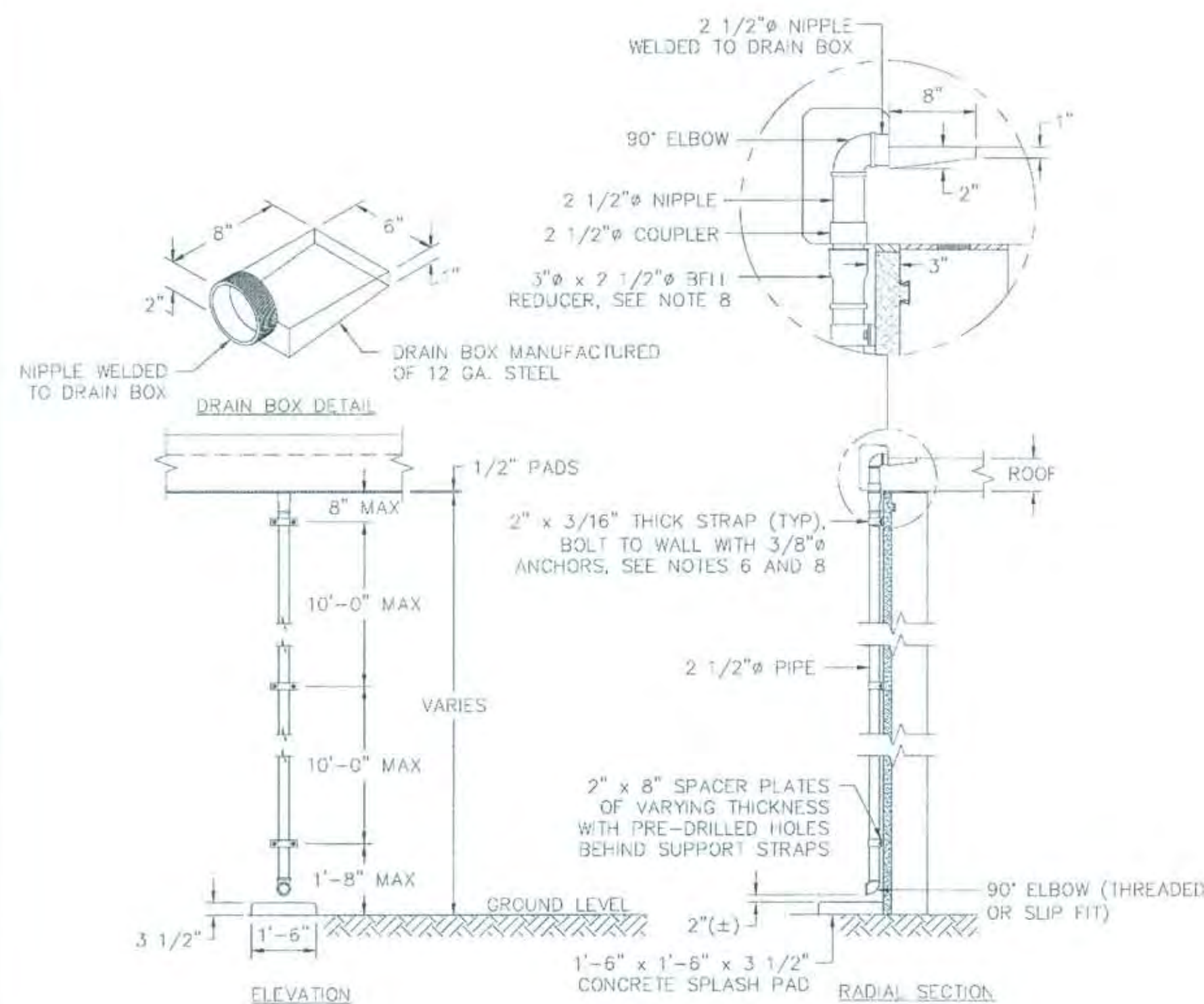






PLAN OF SEISMIC CABLES IN MAT SLAB 1

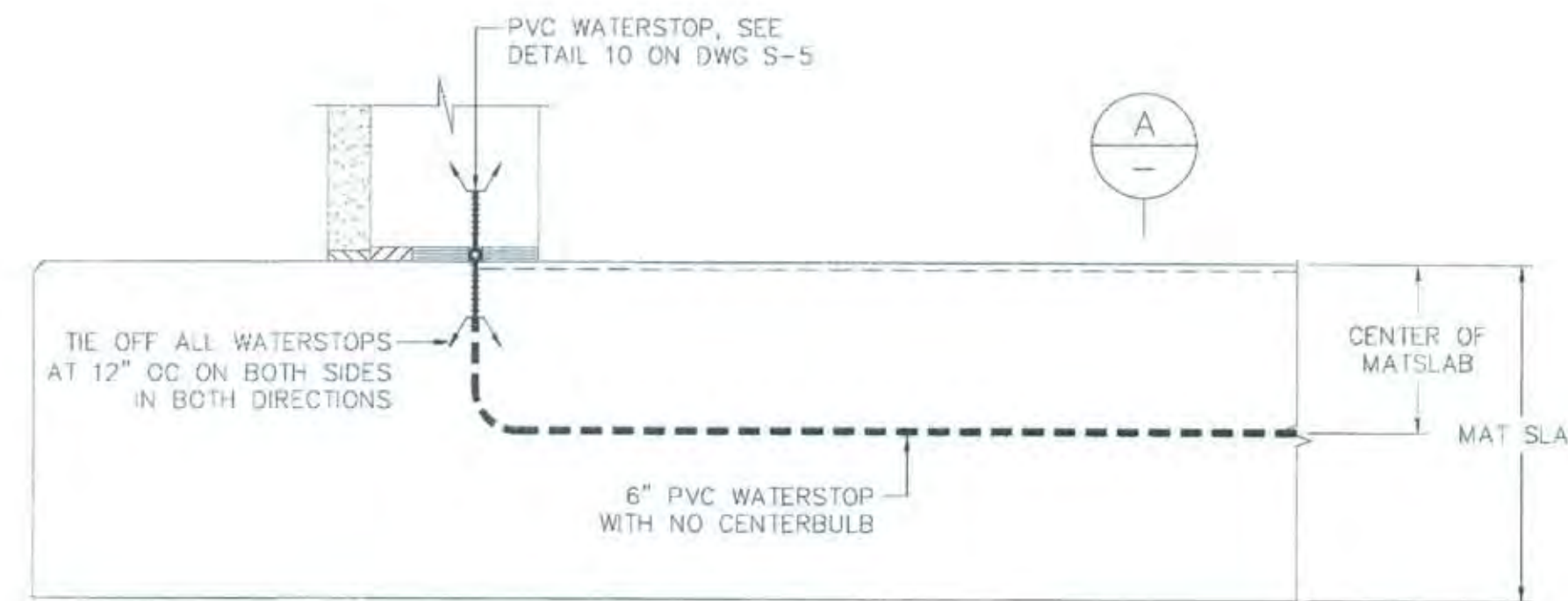
NOTE:  
SEISMIC CABLE SET MAY BE PLACED ON EITHER SIDE OF WALL, 3" CLEARANCE TO EDGE OF MAT SLAB MUST BE MAINTAINED



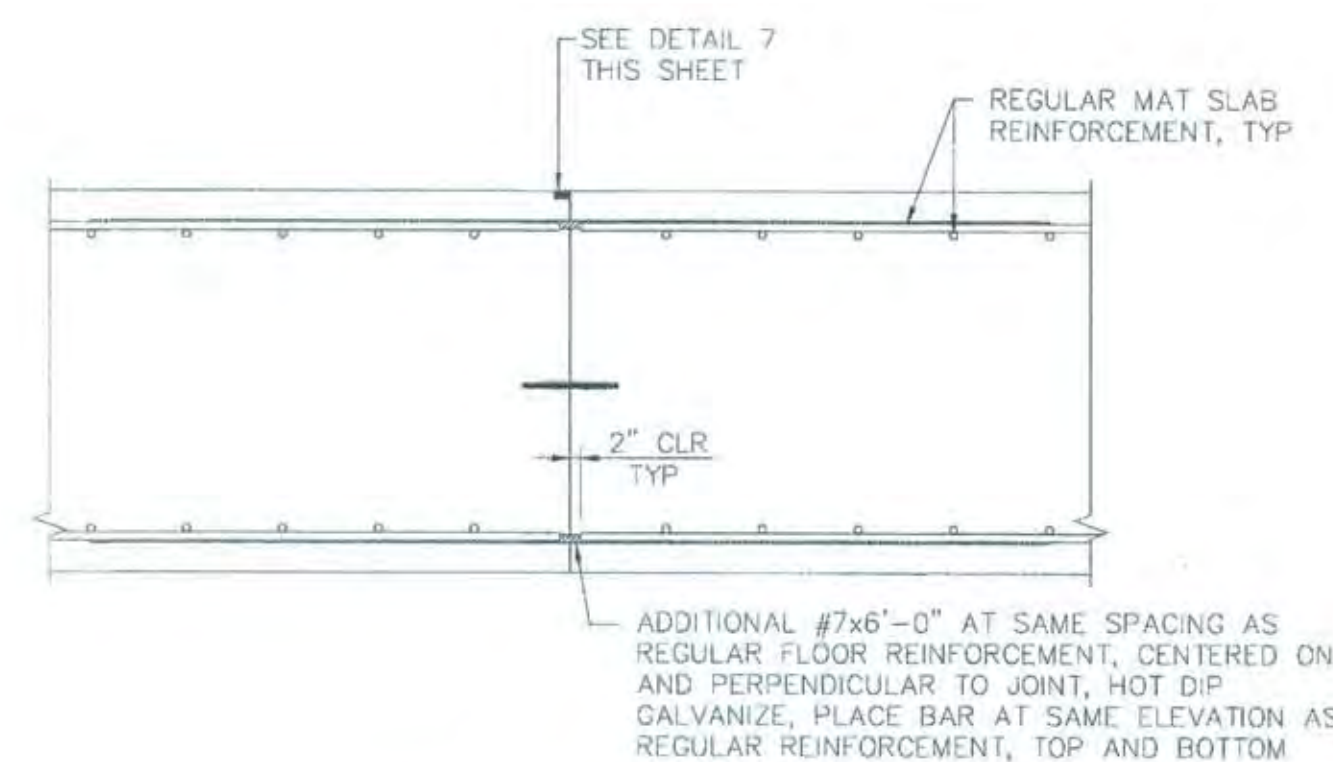
DOWNSPOUT DETAILS 5  
(8 DOWNSPOUTS REQUIRED, EVENLY SPACED)

DOWNSPOUT NOTES:

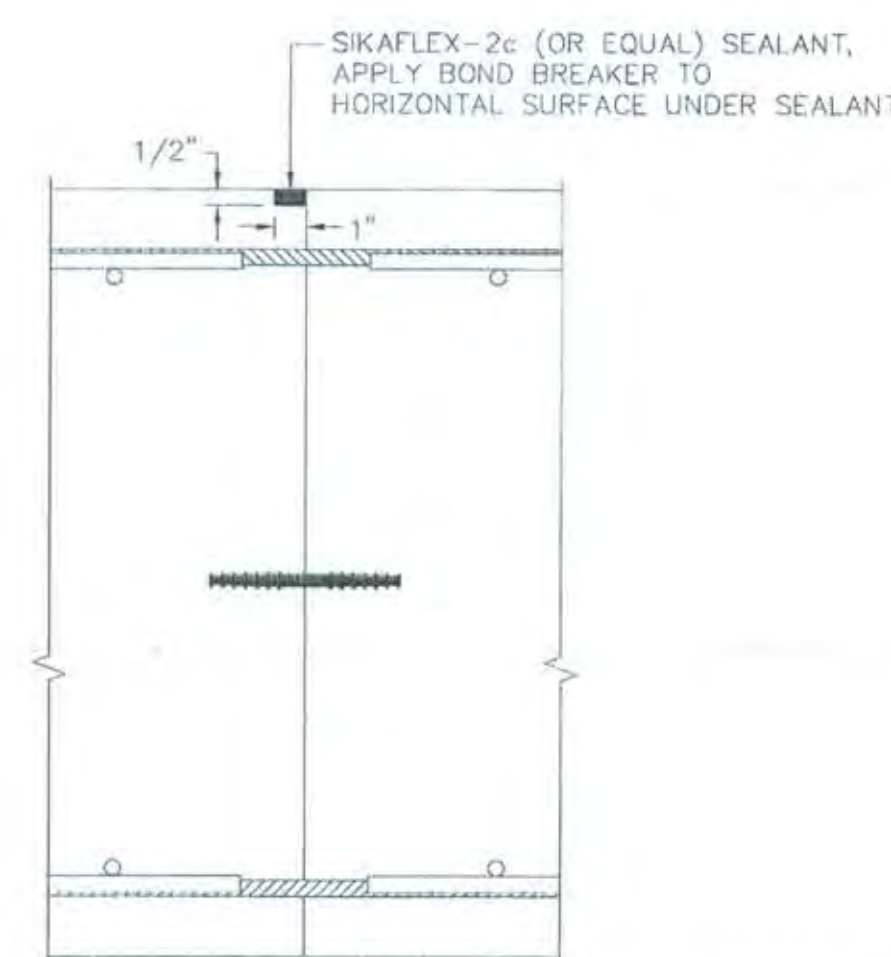
- 1) DRAIN BOX, SPACER PLATES AND STRAPS TO BE MANUFACTURED OF CARBON STEEL WITH A MINIMUM YIELD STRENGTH OF 30 KSI.
- 2) DRAIN BOX, SPACER PLATES AND STRAPS TO BE HOT-DIP GALVANIZED AFTER FABRICATION AND DRILLING.
- 3) PIPE TO BE SCH 10 (MIN) GALVANIZED CARBON STEEL.
- 4) PLACE DRAIN BOX TO CL. OF ROOF STEEL BY 2" (TYP). SOME #4 CIRC BARS IN ROOF EDGE MAY TOUCH PIPE FITTINGS TO MAINTAIN REQUIRED CONCRETE COVERAGE.
- 5) USE SST 316 FOR ALL BOLTS UNLESS NOTED OTHERWISE.
- 6) WHERE SST BOLTS ARE IN CONTACT WITH DISSIMILAR METALS, USE INSULATING SLEEVES AND PHENOLIC WASHERS TO ELECTRICALLY ISOLATE THE BOLTS.
- 7) WHERE SST BOLTS ARE PLACED IN THE WALL EXTERIOR, DRILL AND PLACE AFTER WRAPPING AND BEFORE SHOTCRETING. TAKE EXTREME CARE TO AVOID DAMAGING PRESTRESSING STRAND. PLACE A STEEL PIPE AROUND THE DRILL BIT TO KEEP BIT FROM COMING IN CONTACT WITH THE STRAND. INSERT BOLTS BEFORE SHOTCRETING TO MARK HOLE LOCATION. PACK HOLE IN SHOTCRETE WITH EPOXY BEFORE FINAL INSTALLATION OF BOLTS TO INSURE COMPLETE COVERAGE OF STRAND.
- 8) THE 2 1/2" NIPPLE SCREWS INTO THE BOTTOM SIDE OF THE ENCASED COUPLER. THE 3" BELL REDUCER DOES NOT ATTACH TO THE PIPE WITH THREADS, BUT ACTS AS A FUNNEL. THIS ELIMINATES THE PROBLEM ARISING OUT OF SLIGHT MISALIGNMENT OF THE COUPLING.



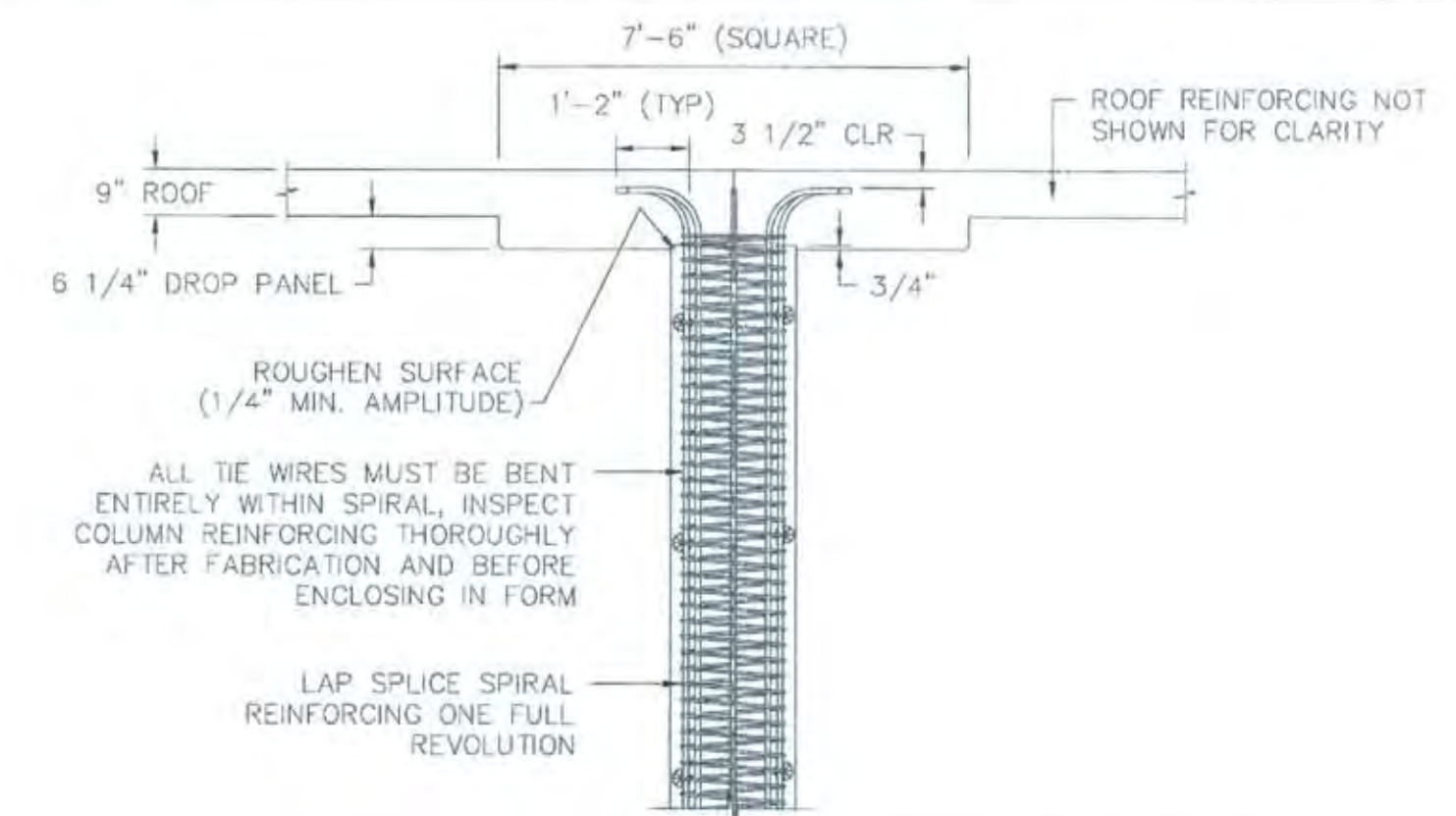
RADIAL SECTION OF WATERSTOP IN OPTIONAL MAT SLAB JOINT 2  
(WALL AND MAT SLAB REINFORCEMENT OMITTED FOR CLARITY)



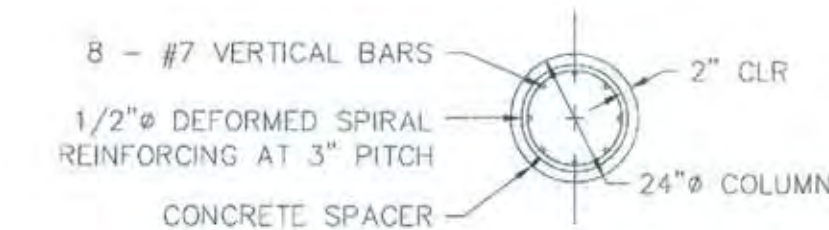
SECTION A



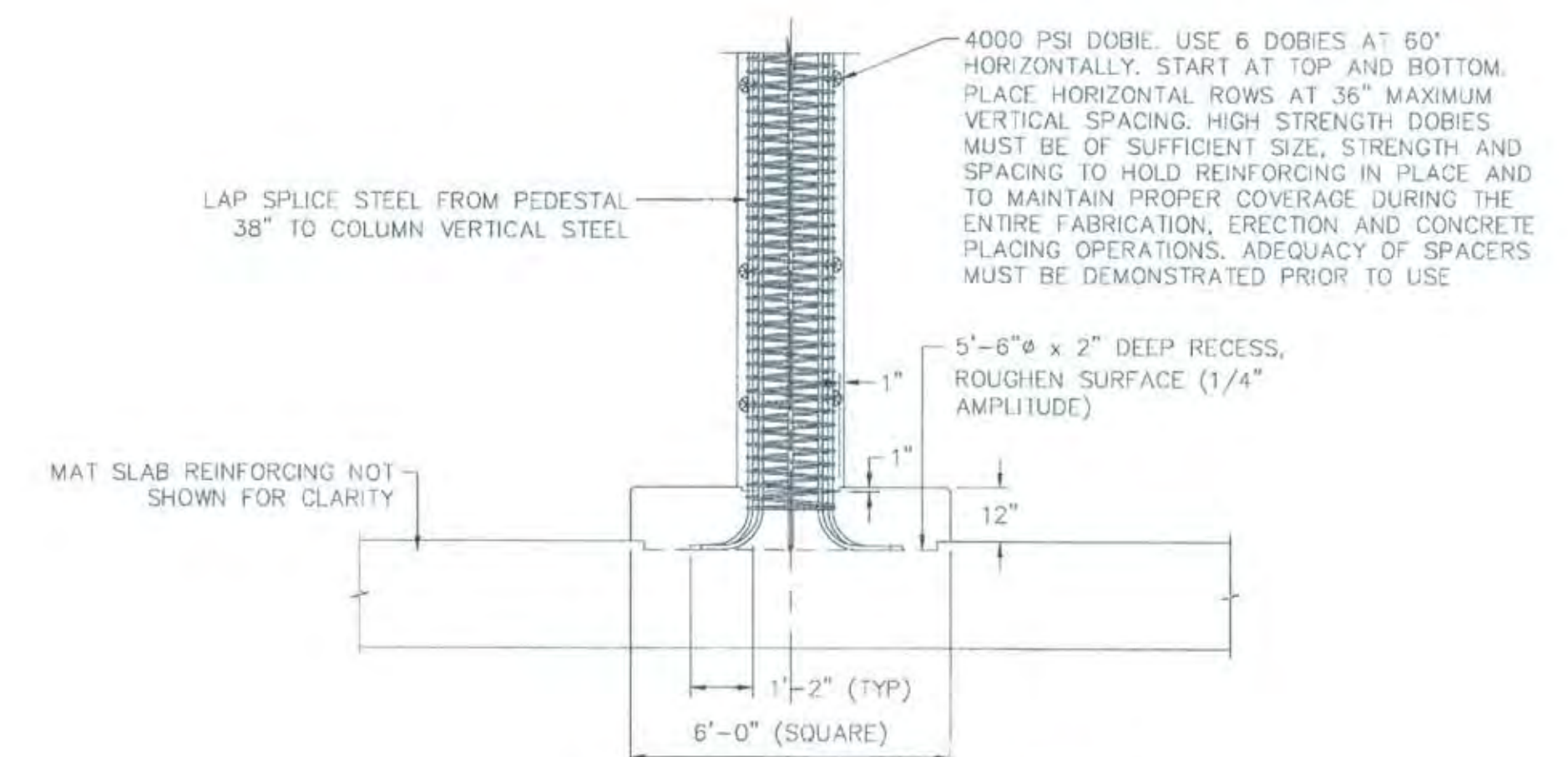
OPTIONAL MAT SLAB JOINT SEALANT DETAIL 7



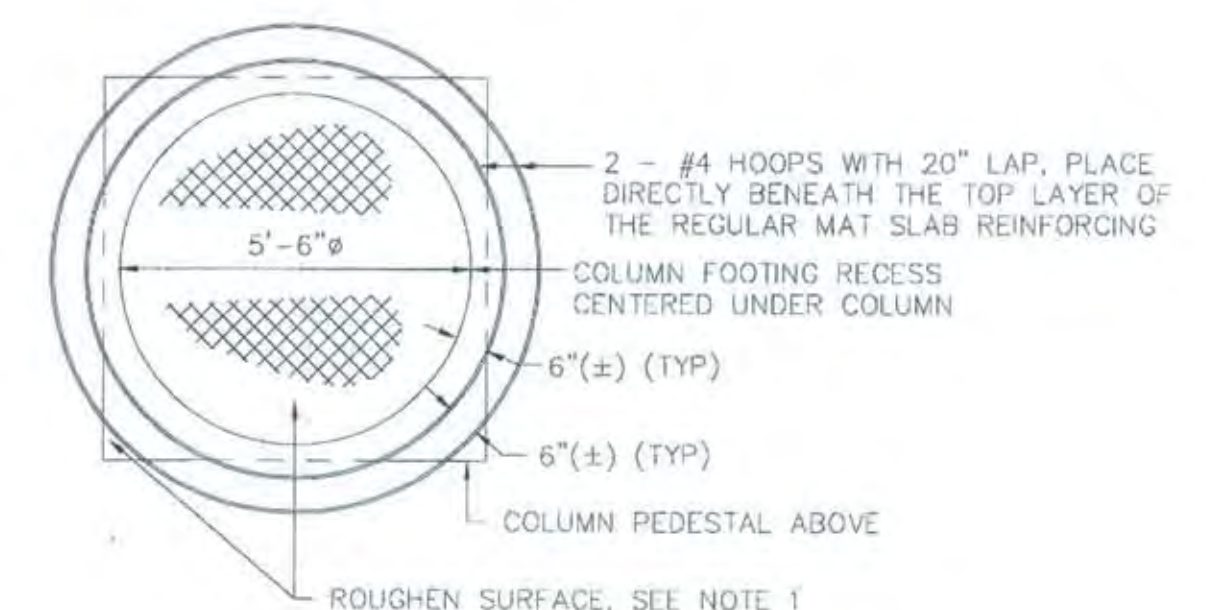
COLUMN TO ROOF CONNECTION 3



COLUMN SECTION 4



COLUMN PEDESTAL 6



PLAN OF COLUMN PEDESTAL RECESS 8

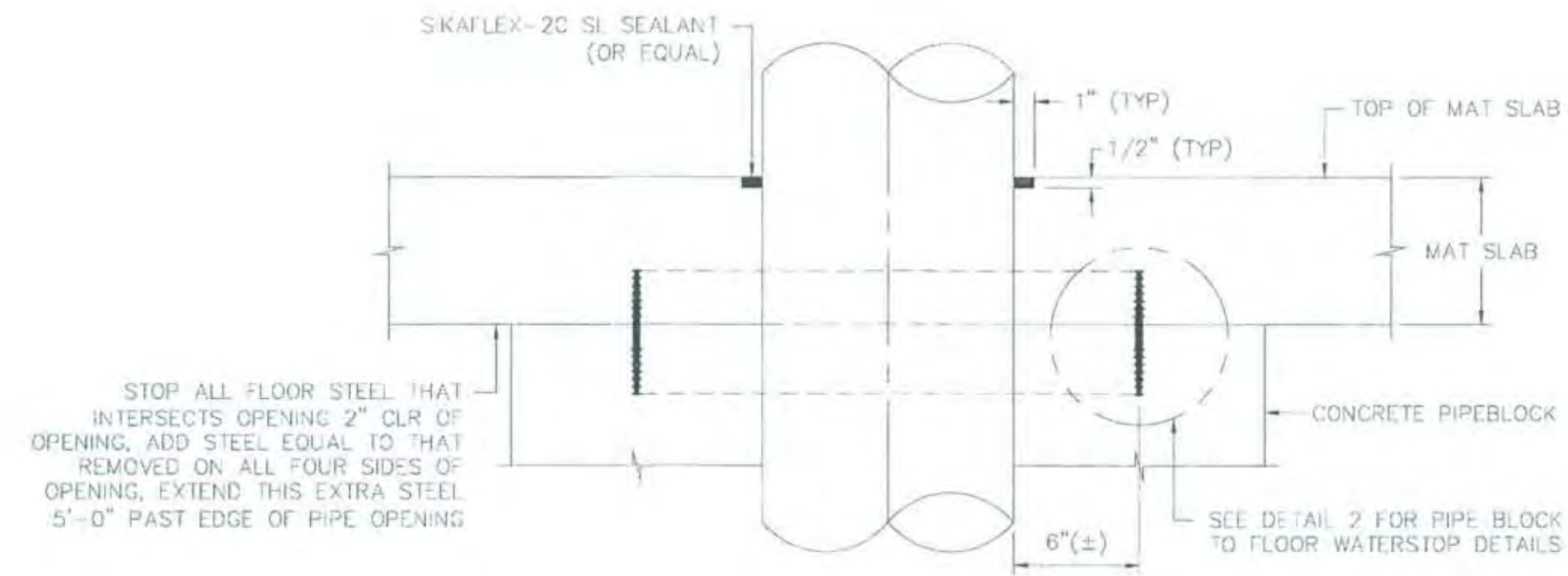
COLUMN PEDESTAL NOTES:

- 1) COLUMN PEDESTAL RECESSES SHALL BE ADEQUATELY ROUGHENED AND CLEANED OF CURING COMPOUNDS BY SANDBLASTING, OR EQUAL, PRIOR TO POURING THE COLUMN PEDESTAL.
- 2) POUR A 1/2" THICK LAYER OF (1C:1S) MIX AT THE COLUMN PEDESTAL RECESS IMMEDIATELY PRIOR TO BEGINNING THE COLUMN PEDESTAL POUR.
- 3) POUR A 1" THICK LAYER OF (1C:1S) MIX AT THE BASE OF THE COLUMNS IMMEDIATELY PRIOR TO BEGINNING THE COLUMN POUR.

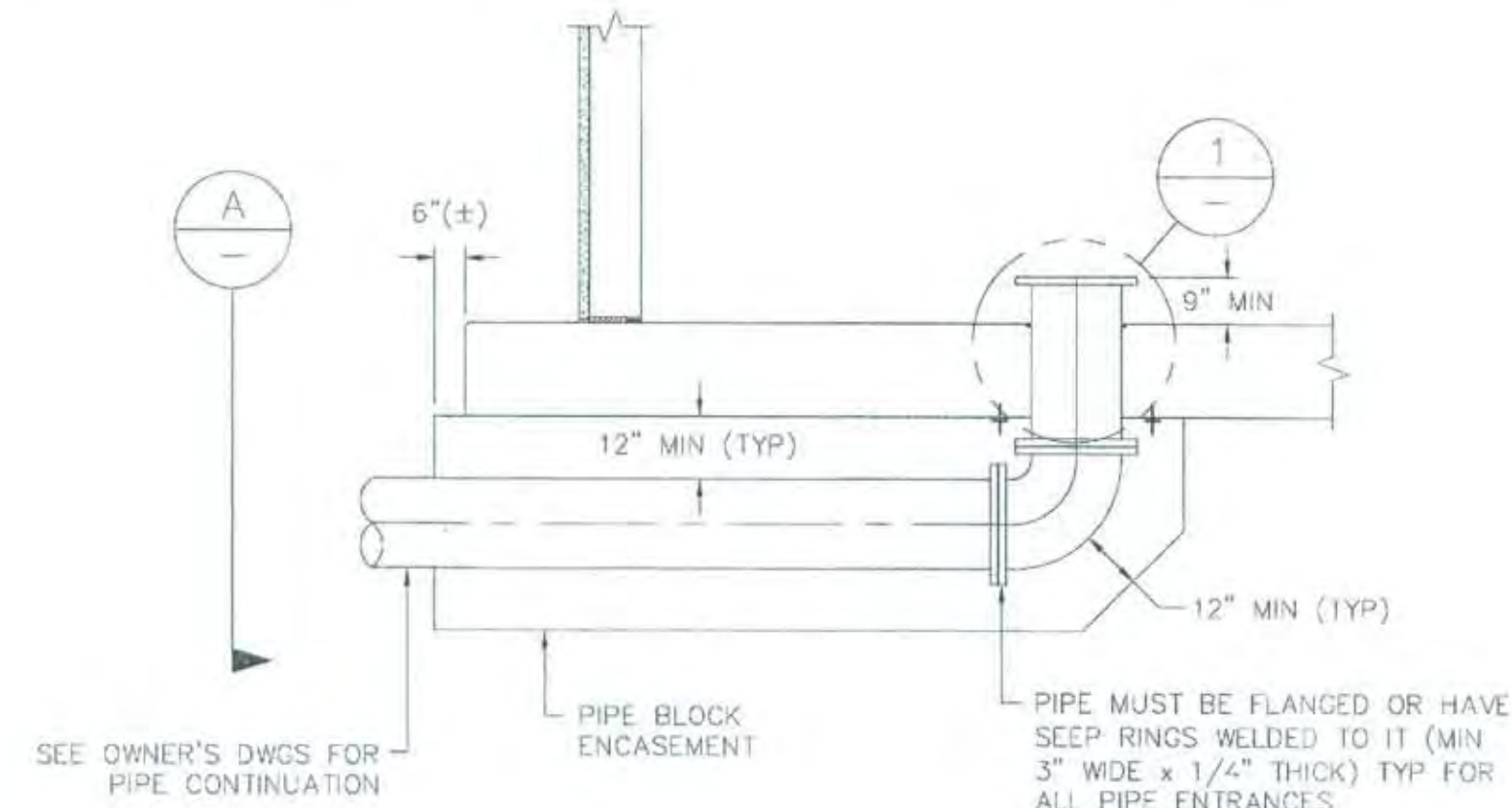


PN: ZJ36	REVISIONS				BENCHMARK ELEV. 15.029 DESCRIPTION: BM251-B3B SAC COUNTY BM 1A-43 DISK IN BRIDGE (E) OF ELKHORN BLVD. & NATOMAS BLVD. (S) SIDE OF ELKHORN BLVD.	FIELD BOOK 1448 SCALE: 1" = 10' ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"	CITY OF SACRAMENTO DEPARTMENT OF UTILITIES		Richard Brady & Associates Civil Engineers and Construction Managers 4800 Supply Center Blvd., Suite 200 Sacramento, CA 95826 Telephone 916.486.0067 Fax 916.486.0065		IMPROVEMENT PLANS FOR:		PLANNING NO.	DWG. NO.
	WATER DISTRIBUTION IMPROVEMENTS		PN: ZJ36	S-7										
	3 MILLION GALLON ELKHORN RESERVOIR		WATER DWG. NO.	30										
	MAT SLAB, COLUMN AND DOWNSPOUT DETAILS		GIS GRID NO.	54										

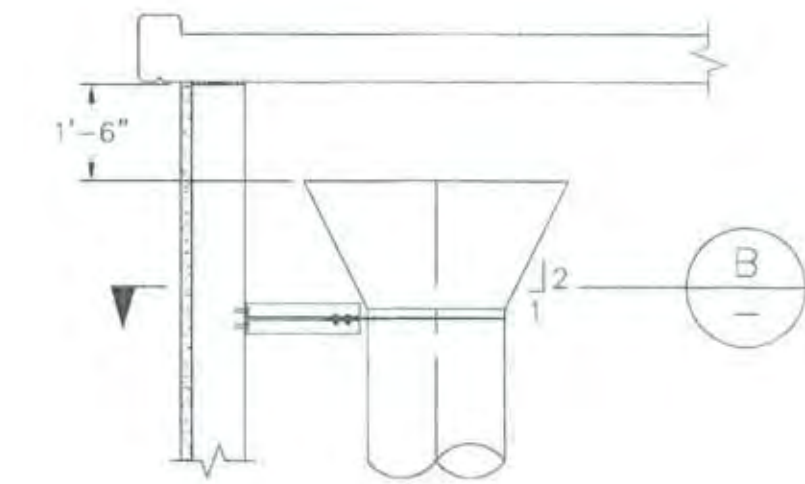




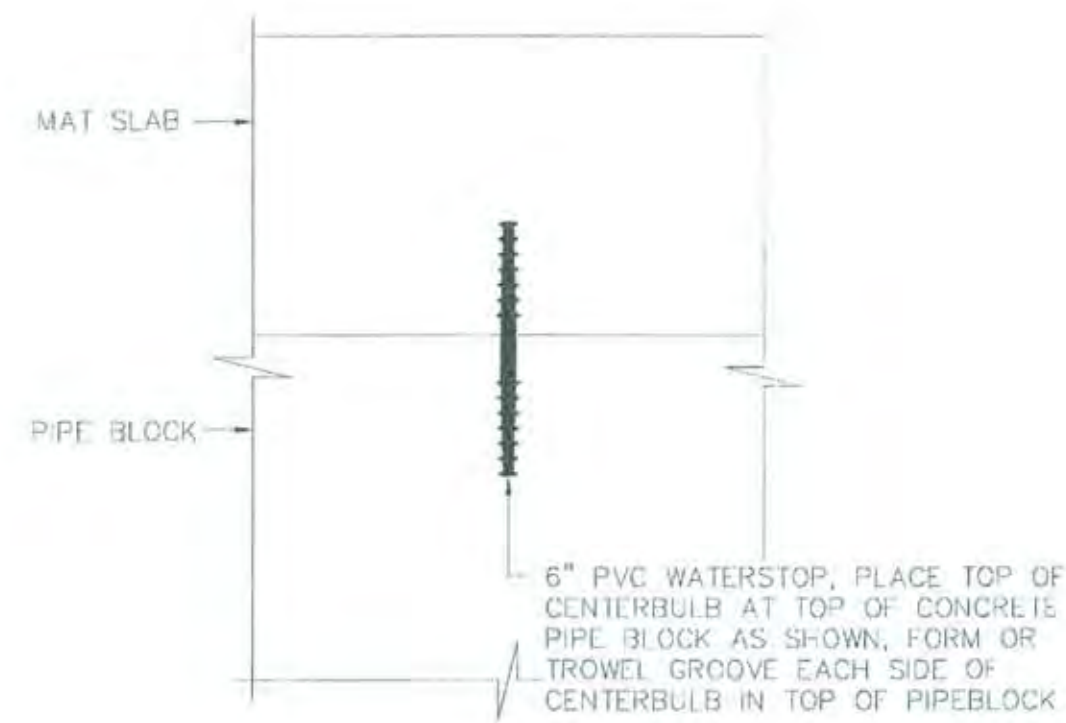
TYPICAL PIPE ENTRANCE  
THROUGH MAT SLAB DETAILS (1)



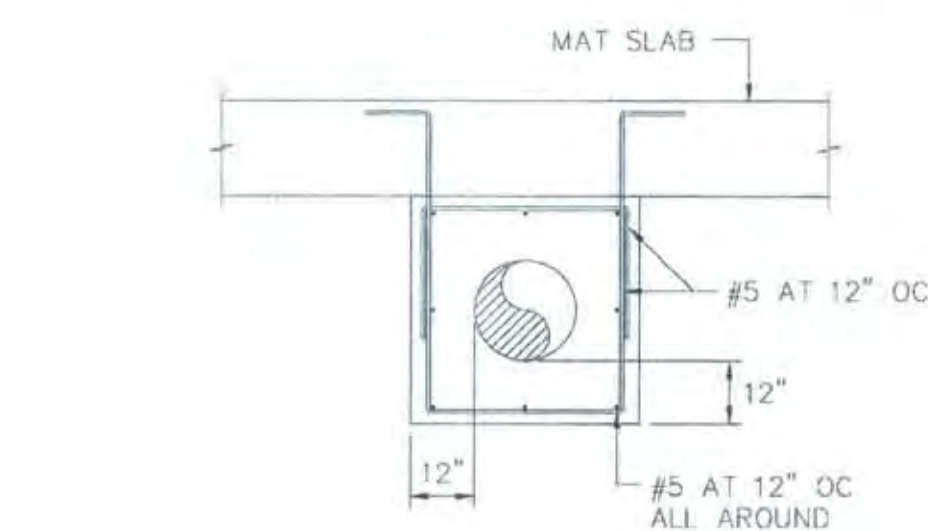
TYPICAL PIPE  
ENTRANCE THROUGH MAT SLAB (2)



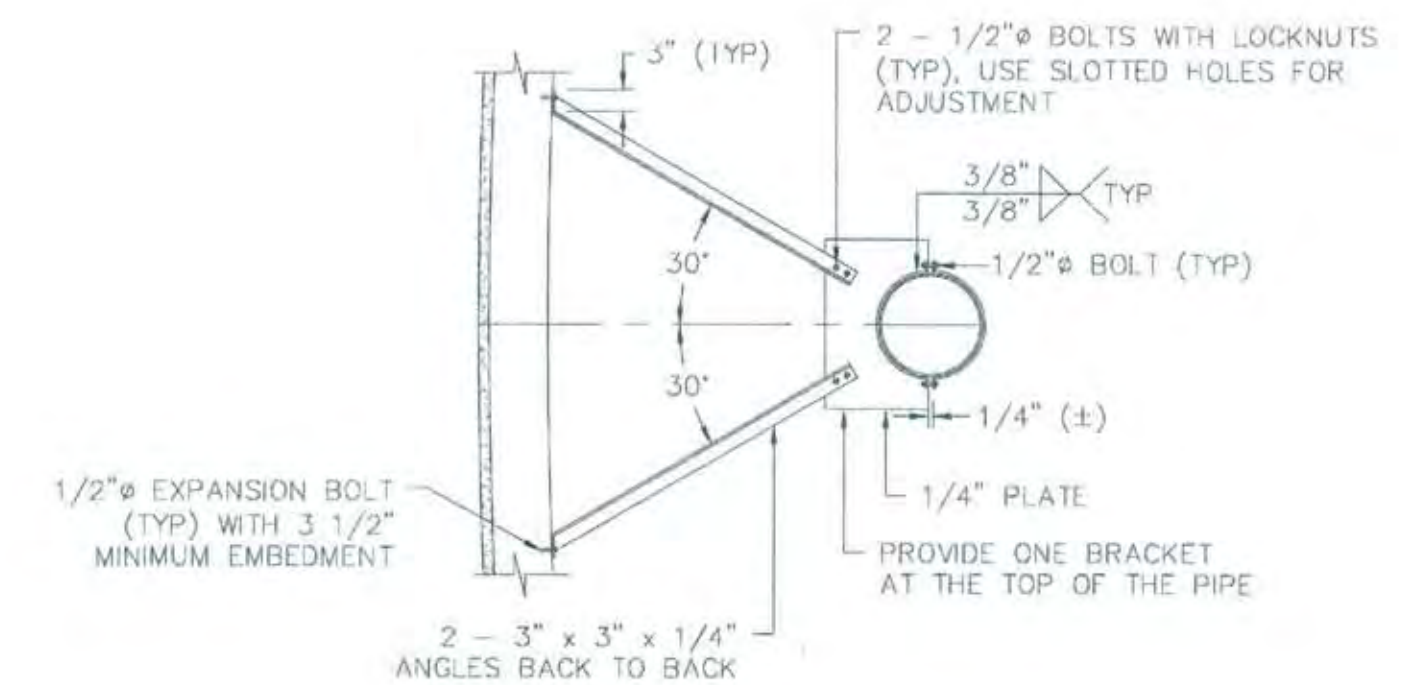
OVERFLOW PIPE DETAIL (3)



PIPE BLOCK TO MAT SLAB  
WATERSTOP DETAILS (4)



SECTION (A)



PIPE BRACKET DETAILS (B)

PIPE BRACKET NOTES:

- 1) ALL MATERIAL FOR SHIM PLATES, PIPE BRACKET AND ANGLE SUPPORTS TO BE SST 316.
- 2) USE SST 316 FOR ALL BOLTS NOT FULLY ENCASED IN CONCRETE UNLESS NOTED OTHERWISE.
- 3) WHERE SST BOLTS ARE IN CONTACT WITH DISSIMILAR METALS, USE INSULATING SLEEVES AND PHENOLIC WASHERS TO ELECTRICALLY ISOLATE THE BOLTS.



PN: ZJ36

NO.	DESCRIPTION	DATE	BY
1			
2			
3			
4			

BENCHMARK ELEV. 15.829  
DESCRIPTION: BM251-B3B  
SAC COUNTY BM 1A-43 DISK IN  
BRIDGE (E) OF ELKHORN BLVD.  
& NATOMAS BLVD. (S) SIDE  
OF ELKHORN BLVD.

FIELD BOOK  
1448  
SCALE:  
ON ORIGINAL SCALE  
DRAWING ADJUST  
SCALED DIMENSIONS  
IF THIS DOES NOT  
SCALE AT 1"

1"  
DRAWN BY: SDF  
DATE: JULY 15, 2005



CITY OF SACRAMENTO  
DEPARTMENT OF UTILITIES

DESIGNED BY: RLB  
R.C.E. NO. 18332 DATE 7/15/05

CHECKED BY: MVB  
R.C.E. NO. 66993 DATE 7/15/05

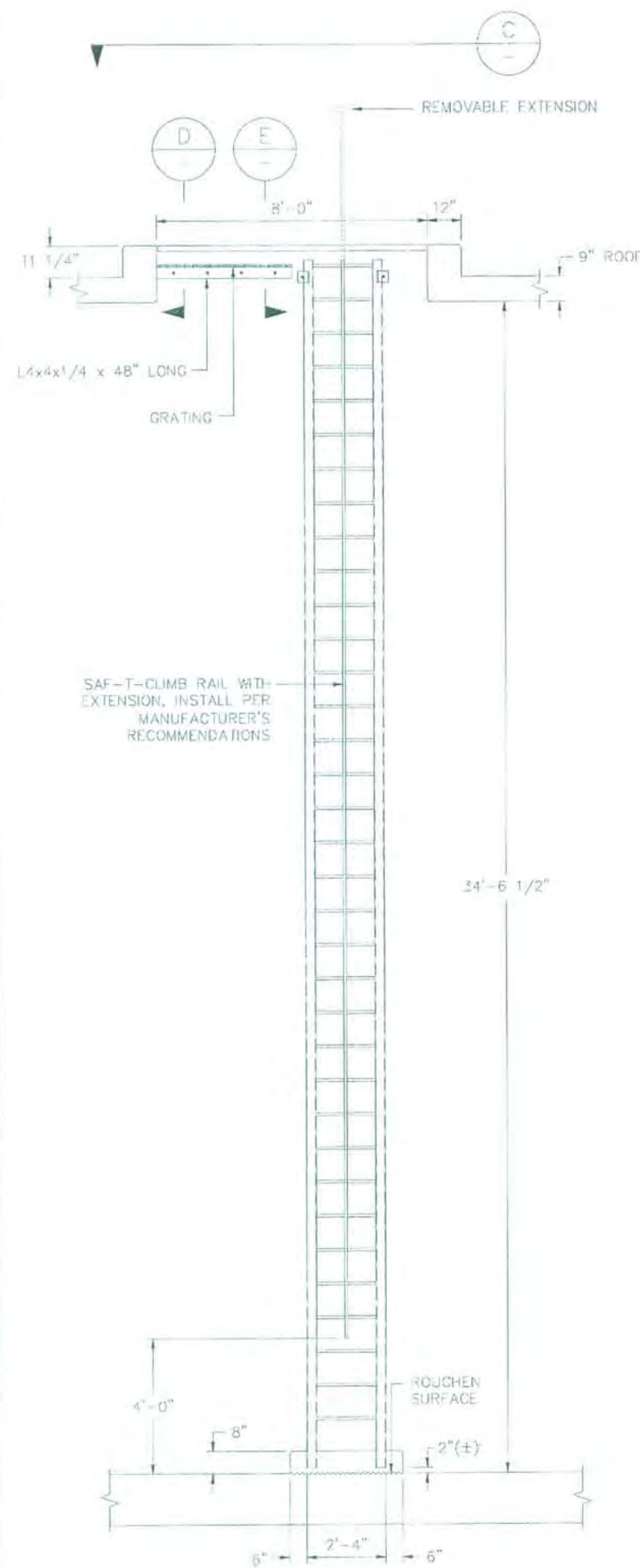
Richard Brady & Associates  
Civil Engineers and Constructors, Inc.  
1000 Highway 99, Suite 200  
Folsom, CA 95630  
Tel: 916.451.0000 Fax: 916.451.0002

IMPROVEMENT PLANS FOR:  
WATER DISTRIBUTION IMPROVEMENTS  
3 MILLION GALLON ELKHORN RESERVOIR  
PIPE ENTRANCE DETAILS

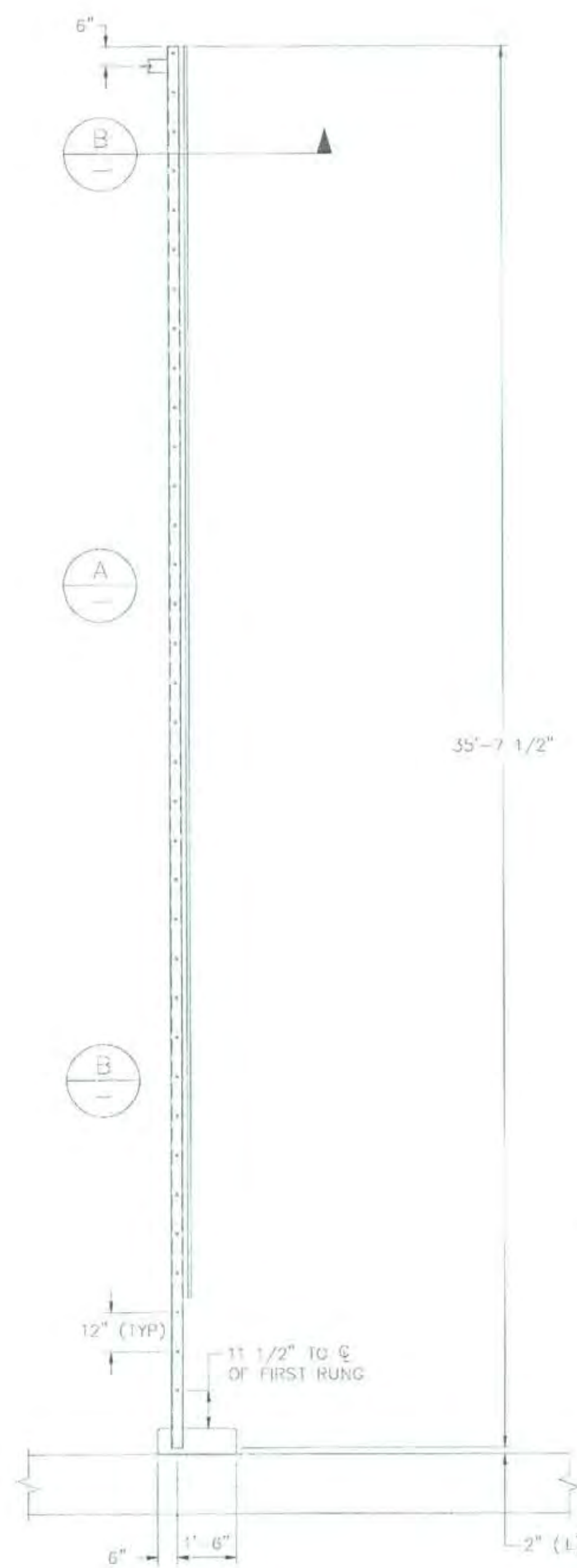
PLANNING NO. S-8  
PN: ZJ36 SHEET 31 OF 54  
WATER DWG NO.  
GIS GRID NO. J13

CC: ZJ36 ELKHORN RESERVOIR

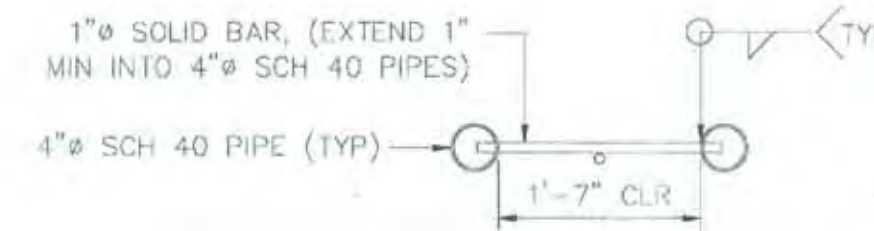




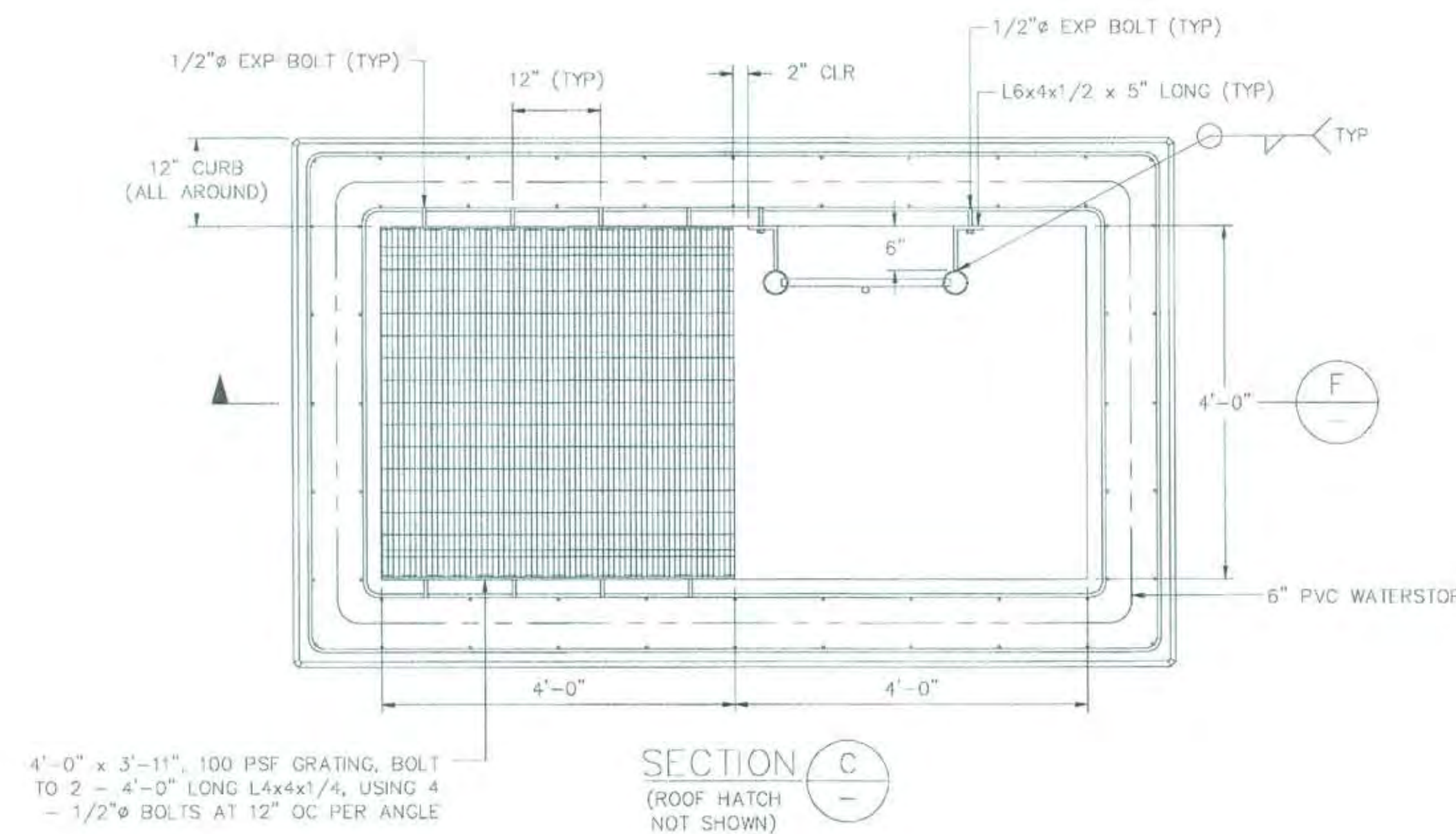
INTERIOR LADDER AND ROOF HATCH (1)



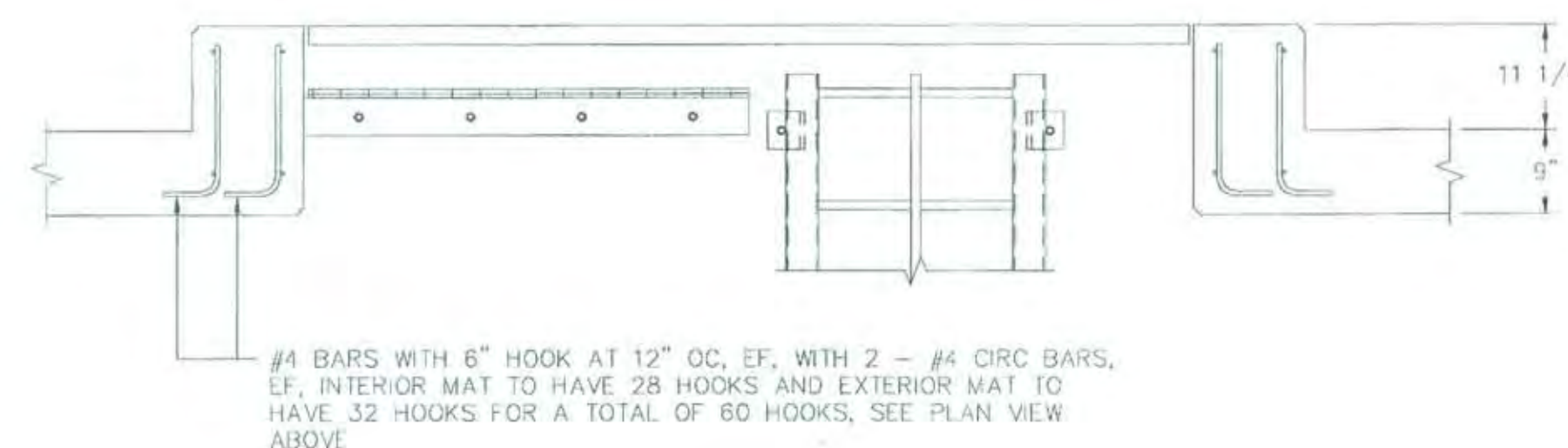
ELEVATION OF INTERIOR LADDER (2)



SECTIONS A B



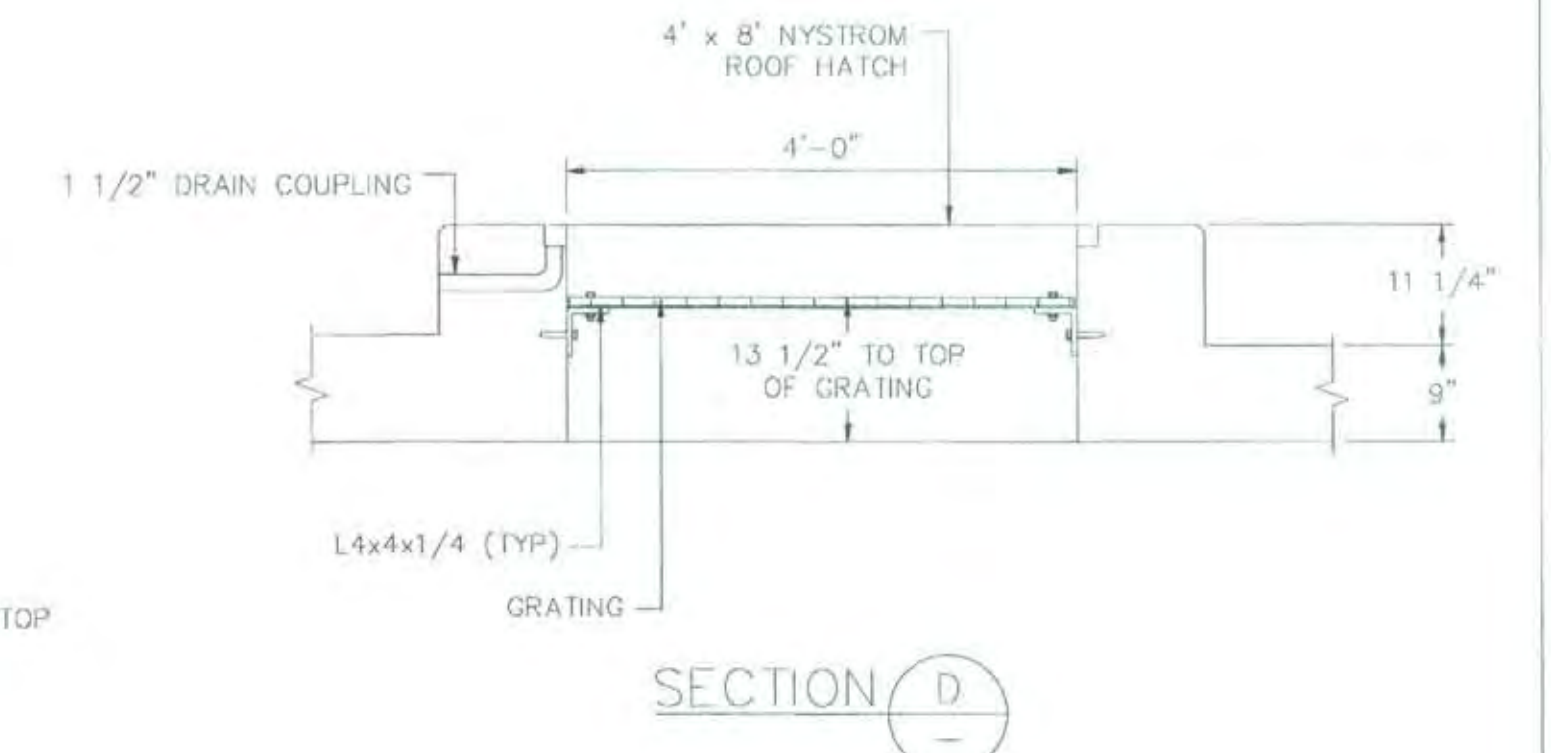
SECTION C (ROOF HATCH NOT SHOWN)



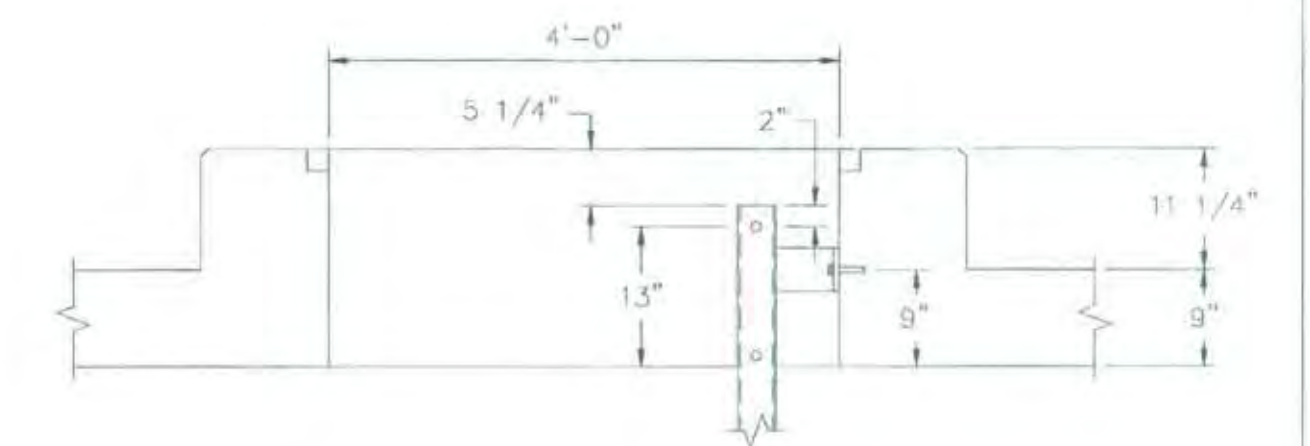
SECTION F

INTERIOR LADDER NOTES:

- 1) ALL MATERIAL FOR INTERIOR LADDER PIPE SIDERAILS, RUNGS, BRACKETS, SAF-T-CLIMB, AND BASE PLATES TO BE SST 304.
- 2) ROOF HATCH GRATING TO BE SST 304 OR FIBERGLASS.
- 3) LADDER RUNGS TO BE SOLID SQUARE BARS, WITH TREAD ON TOP SURFACE.
- 4) ALL WELDS TO BE 1/4" MINIMUM.
- 5) ROOF HATCH TO BE MANUFACTURED OF ALUMINUM.
- 6) ALL ALUMINUM IN CONTACT WITH CONCRETE MUST BE COATED WITH A HEAVY BITUMASTIC COATING OR EPOXY PAINT.
- 7) USE SST 316 FOR ALL BOLTS UNLESS NOTED OTHERWISE.
- 8) WHERE SST BOLTS ARE IN CONTACT WITH DISSIMILAR METALS, USE INSULATING SLEEVES AND PHENOLIC WASHERS TO ELECTRICALLY ISOLATE THE BOLTS.



SECTION D



SECTION E



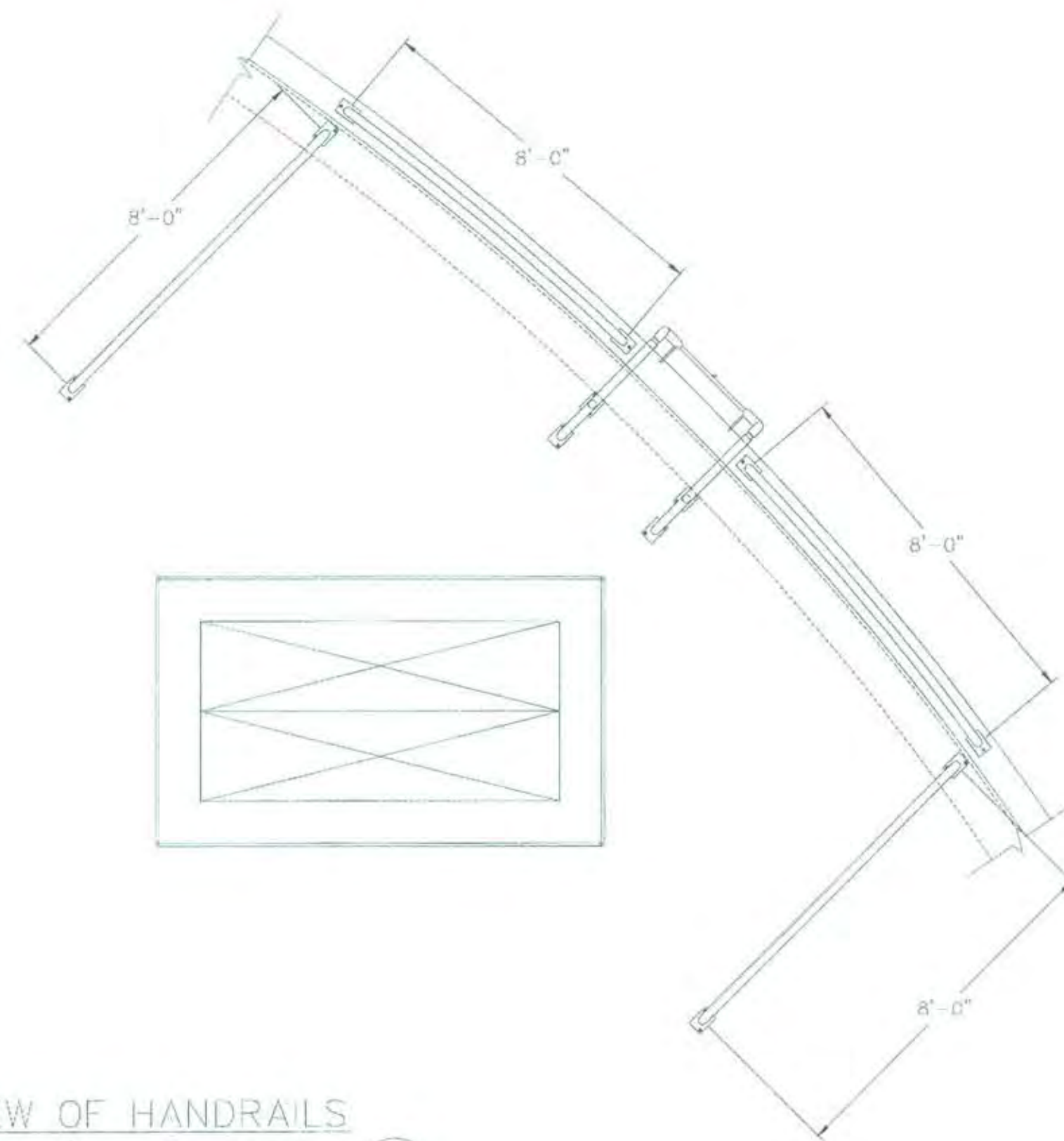
PN: ZJ36	REVISIONS				BENCHMARK ELEV. 15.829 DESCRIPTION: BM251-B3B SAC COUNTY BM 1A-43 DISK IN BRIDGE (E) OF ELKHORN BLVD. & NATOMAS BLVD. (S) SIDE OF ELKHORN BLVD.	FIELD BOOK 1448 SCALE: ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"	1"		CITY OF SACRAMENTO DEPARTMENT OF UTILITIES		Richard Brady & Associates Civil Engineers and Construction Managers 1001 Northgate Center Blvd. Suite 100 Sacramento, CA 95833 Telephone 916.444.0000 Fax 916.444.0001	IMPROVEMENT PLANS FOR: <b>WATER DISTRIBUTION IMPROVEMENTS 3 MILLION GALLON ELKHORN RESERVOIR INTERIOR LADDER AND HATCH DETAILS</b>	PLANNING NO. PN: ZJ36 WATER DWG NO. J13	DWG. NO. S-9 SHEET 32 OF 54
	NO.	DESCRIPTION	DATE	BY										

66-2J36 ELKHORN RESERVOIR



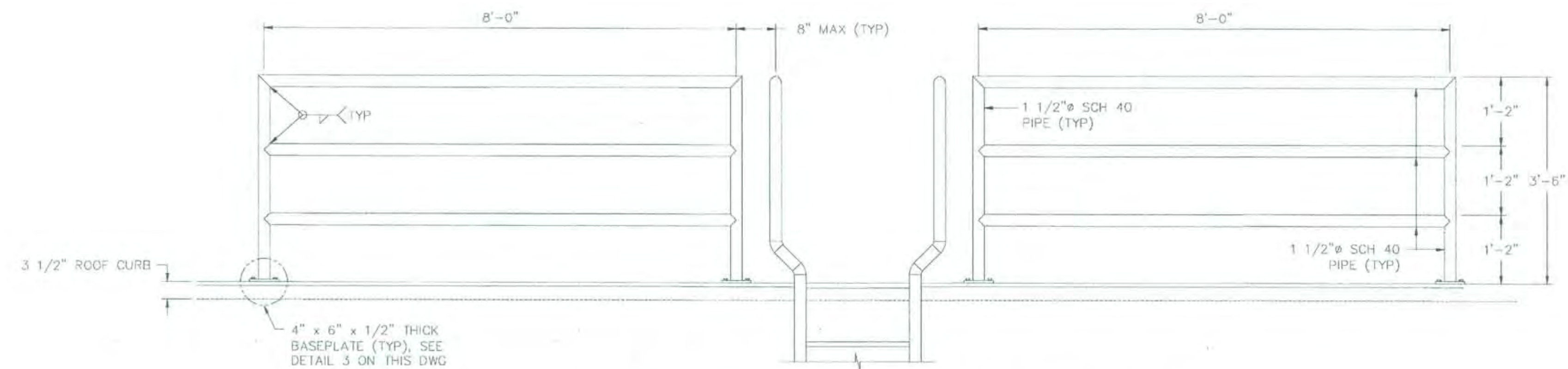






PLAN VIEW OF HANDRAILS  
AROUND 4' x 8' HATCH

1

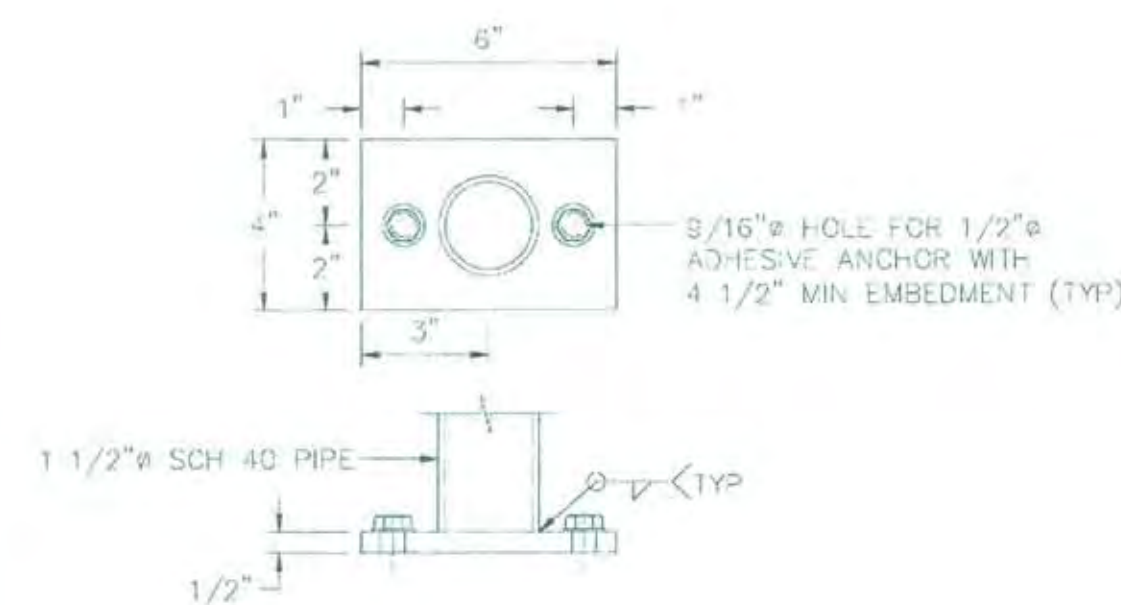


GUARDRAIL ELEVATION AT EXTERIOR LADDER

2

HANDRAIL NOTES:

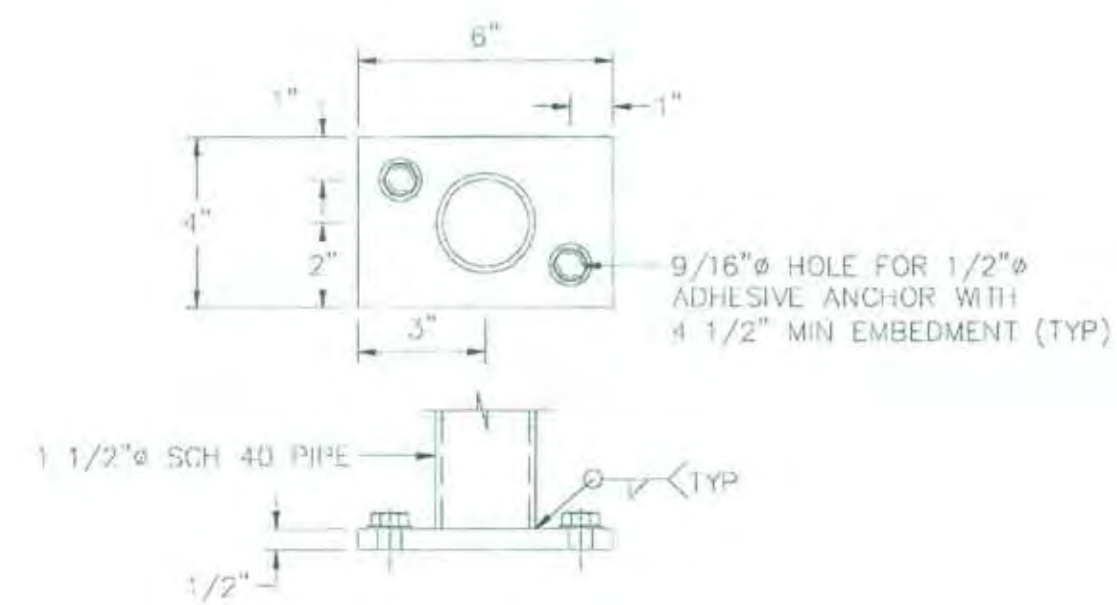
- 1) ALL MATERIAL FOR RAILS AND POSTS TO BE MANUFACTURED OF ALUMINUM 6061-T6.
- 2) ALL WELDS TO BE 1/4" MINIMUM.
- 3) ALL WELDS AND TRANSITIONS TO BE SMOOTH AND FREE OF BURRS AND SHARP EDGES.



BASE PLATE  
DETAILS AT ROOF EDGE

(4 REQUIRED)

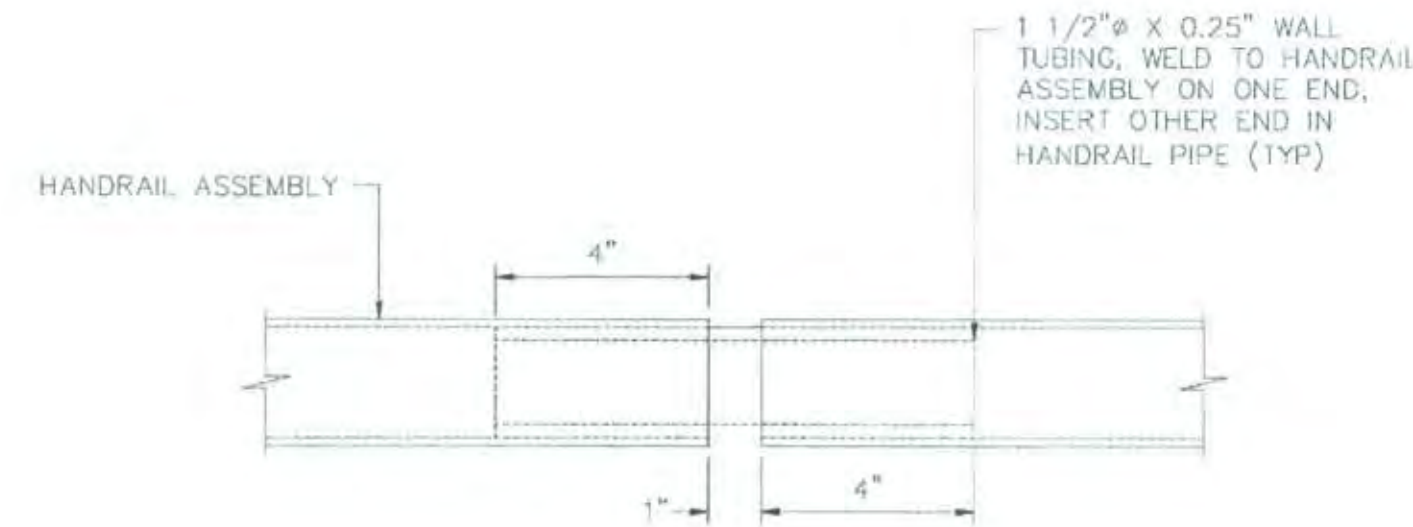
3



BASE PLATE  
DETAILS ON TOP OF ROOF

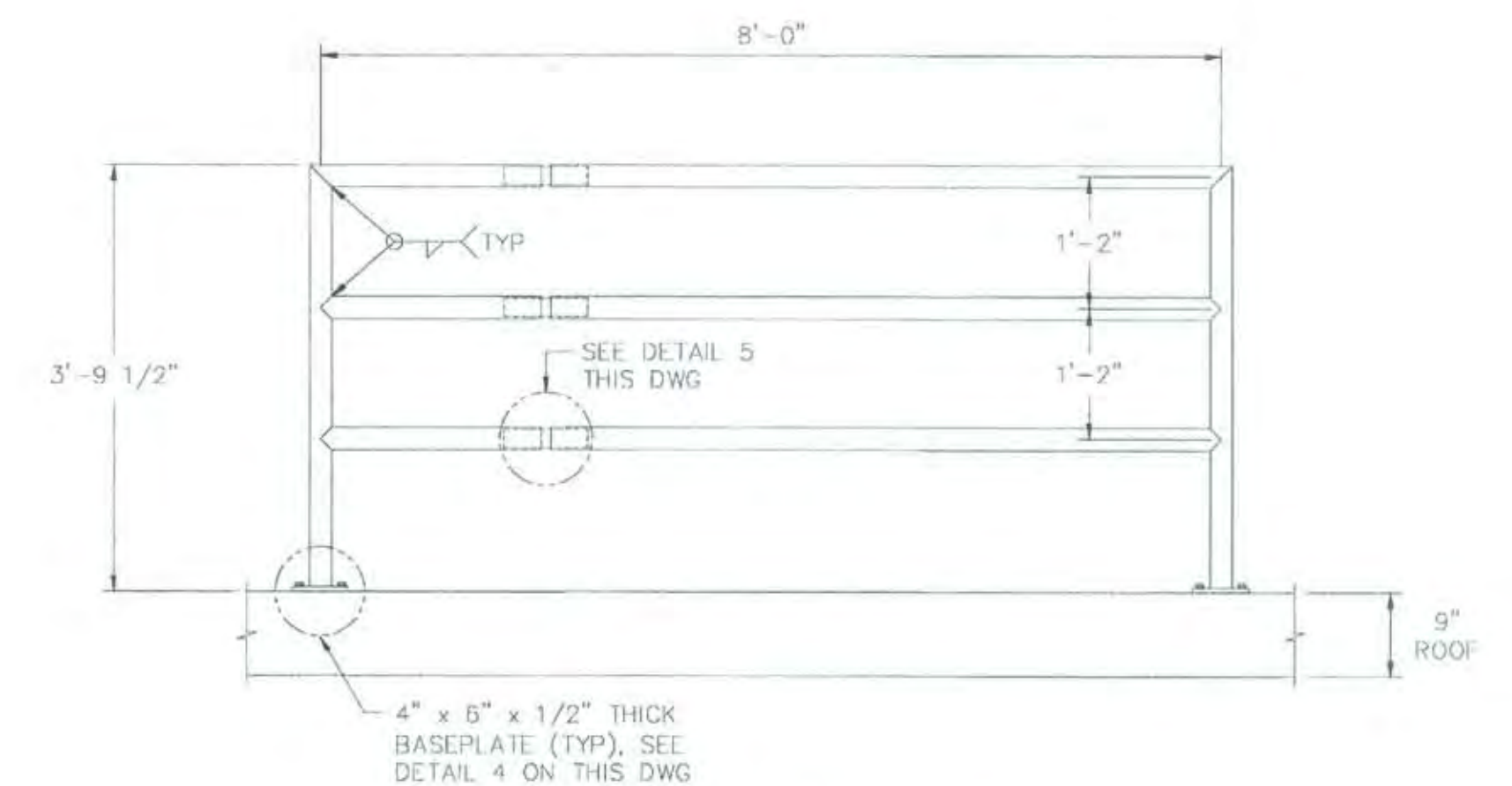
(4 REQUIRED)

4



EXPANSION JOINT DETAIL

5



HANDRAIL DETAILS

6

PN: ZJ36

NO.	DESCRIPTION	DATE	BY
1			
2			
3			
4			
5			

BENCHMARK ELEV. 15.824  
DESCRIPTION: BM25T-B3B  
SAC COUNTY BM 1A-43 DISK IN  
BRIDGE (E) OF ELKHORN BLVD.  
& NATOMAS BLVD. (S) SIDE  
OF ELKHORN BLVD.

FIELD BOOK  
1448  
SCALE:  
ON ORIGINAL SCALE  
DRAWING ADJUST  
SCALED DIMENSIONS  
IF THIS DOES NOT  
SCALE AT 1"

1" = 1'



CITY OF SACRAMENTO  
DEPARTMENT OF UTILITIES

DRAWN BY: SDF  
DATE: AUGUST 26, 2005

DESIGNED BY: RLB  
R.C.E. NO. 18330, DATE: 8/26/05

CHECKED BY: MVB  
R.C.E. NO. 66993, DATE: 8/26/05

Richard Brady & Associates  
Civil Engineers and Construction Managers  
4100 Arroyo Canyon Road, Suite 200  
San Diego, California 92108  
Telephone: 619.446.0000 Fax: 619.446.0000

IMPROVEMENT PLANS FOR:  
WATER DISTRIBUTION IMPROVEMENTS  
3 MILLION GALLON ELKHORN RESERVOIR  
HANDRAIL DETAILS

PLANNING NO. S-11  
PN: ZJ36 SHEET 34 OF 54  
WATER DWG NO. 34  
GIS GRID NO. J13



CC: ZJ36 ELKHORN RESERVOIR



ELKHORN RESERVOIR  
S:\ELECTRICAL DRAWINGS\ELKHORN RESERVOIR\Elkhorn\_E-01.dwg

ABBREVIATION	DESCRIPTION
(E)	EXISTING
(N)	NEW
3-PH	THREE PHASE
3-W	THREE WIRE
A	AMP
AC	ALTERNATING CURRENT
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
BCW	BARE COPPER WIRE
BLDG	BUILDING
C	CONDUIT
CAB	CABINET
CKT	CIRCUIT
CLF	CURRENT LIMITING FUSE
ONTL	CONTROL
CONN	CONNECTION
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY (i.e. CR1)
DIFF	DIFFERENTIAL
EG	ENGINE GENERATOR
ENG	ENGINE
EQUIP	EQUIPMENT
ETM	ELAPSED TIME METER
FVNR	FULL VOLTAGE NON REVERSING
G	GROUND WIRE
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND(ING)
HI	HIGH
HTR	HEATER
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
JB	JUNCTION BOX
kcM (or MCM)	1000 CIRCULAR MILS
KVA	KILOVOLT AMPERES
KW	KILOWATT
L	LINE
LO	LOW
LTG	LIGHTING
ma	MILLIAMPERE
MCC	MOTOR CONTROL CENTER
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NEUT	NEUTRAL
NON-SH	NON-SHIELDED
No.	NUMBER
OL	OVERLOAD

ABBREVIATION	DESCRIPTION
P	POLE
PB	PULLBOX
PH or Ø	PHASE
PMP	PUMP
PNL	PANEL
PR	PAIR
PSI	POUNDS PER SQUARE INCH
PTT	PUS TO TEST
PVC	POLYVINYL CHLORIDE
PWR	POWER
RECEPT	RECEPTACLE
RVNR	REDUCED VOLTAGE NON REVERSING
RGS	RIGID GALVANIZED STEEL CONDUIT
RQMTS	REQUIREMENTS
SCFH	STANDARD CUBIC FOOT per HOUR
SCH	SCHEDULE
SEC	SECOND
SH	SHIELDED (CABLE)
SHT	SHEET
SMUD	SACRAMENTO MUNICIPAL UTILITY DISTRICT
S.S.	STAINLESS STEEL
SP	SPARE
SW	SWITCH
SWGR	SWITCHGEAR
TD_ or TDR	TIME DELAY RELAY
TERM	TERMINAL
XFMR or TXF	TRANSFORMER
TYP	TYPICAL
UPS	UNINTERRUPTABLE POWER SUPPLY
V	VOLT
VA	VOLT-AMP
VAC	VOLTS - ALTERNATING CURRENT
VDC	VOLTS - DIRECT CURRENT
W	WATT or WIRE
W/	WITH
WP	WEATHER PROOF
XDUCER	TRANSDUCER

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	TRANSFORMER		NORMALLY CLOSED CONTACT
	LOW VOLTAGE CIRCUIT BREAKER OR MOTOR CIRCUIT PROTECTOR 600 = SIZE, 3P = 3 POLE MCP = MOTOR CIRCUIT PROTECTOR LSIG = LONG TIME, SHORT TIME, INSTANTANEOUS & GROUND (CHARACTERISTICS)		NORMALLY OPEN CONTACT
	FUSE		NORMALLY CLOSED LIMIT SWITCH
	CURRENT TRANSFORMER		TIME DELAY CONTACT - (TDC) CLOSE AFTER ENERGIZE & DELAY
	POTENTIAL TRANSFORMER OR CONTROL POWER TRANSFORMER		TIME DELAY CONTACT - (TDO) OPEN AFTER ENERGIZE & DELAY
	POWER FAILURE RELAY		NORMALLY OPEN PUSH BUTTON
	VOLTMETER & VOLTMETER SWITCH		NORMALLY CLOSED PUSH BUTTON
	AMMETER & AMMETER SWITCH		CONTROL SWITCH
	CONTACTOR COIL: M = MAIN, F = FORWARD, R = REVERSE OR RUN, S = START		PRESSURE SWITCH - NORMALLY CLOSED OPEN ON RISE IN PRESSURE TO SETPOINT
	SOLENOID VALVE COIL		PRESSURE SWITCH - NORMALLY OPEN CLOSE ON RISE IN PRESSURE TO SETPOINT
	THERMAL OVERLOAD RELAY		FLOAT SWITCH - NORMALLY OPEN CLOSE ON RISE IN LEVEL TO SETPOINT
	MOTOR (HP WRITTEN WITHIN)		PUSH-TO-TEST INDICATING LIGHT R = RED, G = GREEN, W = WHITE, A = AMBER
	ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT (PLAN)		DISCONNECT SWITCH
	JUNCTION BOX SIZE AND TYPE AS SHOWN ON PLANS NUMBER CORRESPONDS WITH CONDUIT SCHEDULE		CONTROL RELAY (X REFERENCE NUMBER) DPDT=2 POLE DOUBLE THROW, 3PDT=3 POLE DOUBLE THROW
	DOOR SWITCH		TIME DELAY RELAY (X REFERENCE NO) TDPU=DELAY ON PICK UP, TDDO=DELAY ON DROP OUT
	MANUAL CONTROL STATION		LEVEL SWITCH (X: L=L0, H=H1, 1,2 ETC = SWITCH REF No.)
	DUPLEX RECEPTACLE WP=WEATHERPROOF BOX: GFCI=GROUND FAULT INTERRUPTER TYPE		ELAPSED TIME METER
	POWER OUTLET SIZE AND TYPE AS SHOWN ON PLANS		CONNECTION NODE
	FLOODLIGHT		RESISTOR/HEATER
	BUBBLER TUBE EMMITER LOCATION		TERMINAL BLOCK POINT FOR FIELD TERMINATIONS
	ULTRASONIC LEVEL SENSOR LOCATION		TERMINATION IN MCC
	FLOAT LOCATION		TERMINATION IN CONTROL PANEL
	GROUND		TERMINATION IN RTU
	GROUND ROD & WELL		GROUND ROD INSERT

GENERAL NOTES:

- PLAN AND ELEVATION DRAWINGS ARE SCHEMATIC IN FORM.
- PLAN AND ELEVATION DRAWINGS ILLUSTRATE APPROXIMATE LOCATIONS AND LAYOUT OF EQUIPMENT. THE CONTRACTOR SHALL DETERMINE ACTUAL LOCATIONS OF EQUIPMENT AND QUANTITIES OF MATERIALS FROM FIELD MEASUREMENTS.
- CONDUIT ROUTING IS SHOWN DIAGRAMATICALLY AND THE CONTRACTOR SHALL INSTALL THE CONDUIT SYSTEMS CONSISTANT WITH FIELD CONDITIONS.
- BURIED CONDUITS SHALL BE A MINIMUM OF 24 INCHES BELOW GRADE ON RUNS NOT EXPOSED TO VEHICULAR TRAFFIC AND A MINIMUM OF 36 INCHES BELOW GRADE WHEN EXPOSED TO VEHICULAR TRAFFIC. BURIED CONDUITS SHALL BE EMBEDDED IN CONCRETE WITH 4" MINIMUM CONCRETE COVERAGE AROUND THE CONDUIT. BACK FILL SHALL BE COMPACTED TO 95%. ROADBED SURFACES DISTURBED DURING TRENCHING SHALL BE REPAIRED TO PRE-CONSTRUCTION CONDITION AFTER INSTALLATION IS COMPLETE.
- CONDUIT AND CABLE DESIGNATIONS ARE AS FOLLOWS (TYPICAL):  
1"C, 3-1PR#16,SH = 1" CONDUIT WITH THREE INDIVIDUAL SHIELDED SINGLE PAIR #16 AWG CABLES.  
3/4"C, 2#10&#12G = 3/4" CONDUIT WITH TWO #10 CONDUCTORS AND A #12 CONDUCTOR GROUND.

PN: ZJ36

REVISIONS				BENCH MARK DESCRIPTION:	ELEV.	FIELD BOOK
NO.	DESCRIPTION	DATE	BY			

CITY OF SACRAMENTO DEPARTMENT OF UTILITIES		
SCALE: H: N/A V: N/A	ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"	
DRAWN BY: Q. NHAM DATE: 06/05	DESIGNED BY: J. ZHUANG R.C.E. No.14584 DATE: 06/05	CHECKED BY: D. HANSEN R.C.E. No.12512 DATE: 06/05

IMPROVEMENT PLANS FOR:  
**ELKHORN RESERVOIR  
ELECTRICAL SYMBOLS,  
ABBREVIATIONS AND GENERAL NOTES**

PLANNING NO.	E-1
PN: ZJ36	SHEET 35
DRAWING NO.	OF 54
GIS GRID NO.	



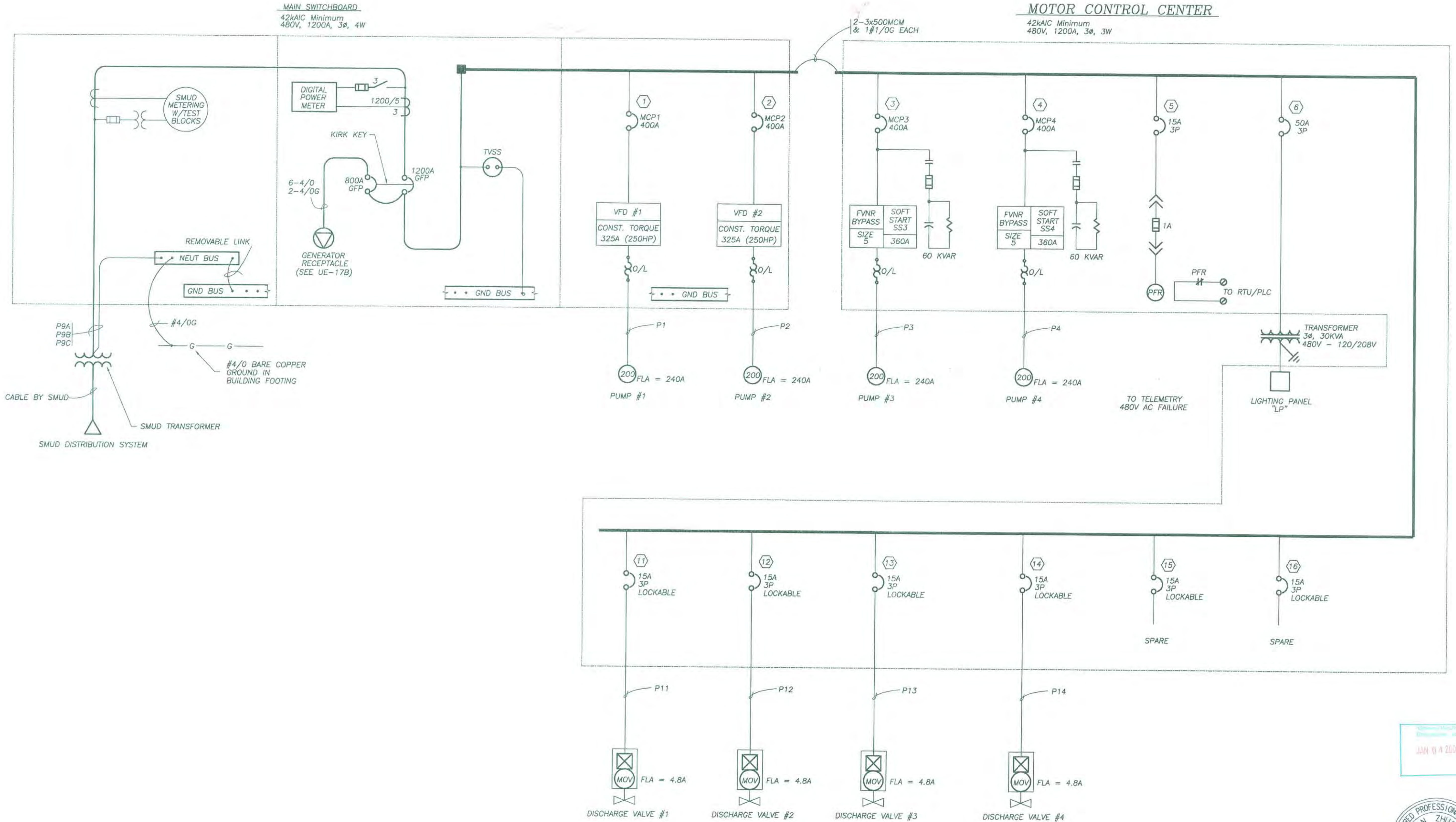
Stamp: JAN 04 2006

ELKHORN RESERVOIR



ELKHORN RESERVOIR  
S:\ELECTRICAL DRAWINGS\ELKHORN RESERVOIR\Elkhorn\_E-02-03.dwg

PN: ZJ36



REVISIONS  
NO. DESCRIPTION DATE BY

REGISTERED PROFESSIONAL ENGINEER  
JIAN ZHUANG  
NO. E14584  
30-06  
ELECTRICAL  
STATE OF CALIFORNIA

PN: ZJ36

NO.	DESCRIPTION	DATE	BY

BENCH MARK	ELEV.
DESCRIPTION:	

FIELD BOOK  
SCALE:  
H: N/A  
V: N/A  
ON ORIGINAL SCALE  
DRAWING ADJUST  
SCALED DIMENSIONS  
IF THIS DOES NOT  
SCALE AT 1"

CITY OF SACRAMENTO  
DEPARTMENT OF UTILITIES  
DRAWN BY: Q. NHAM  
DATE: 06/05  
DESIGNED BY: J. ZHUANG  
R.C.E. NO.14584 DATE: 06/05  
CHECKED BY: D. HANSEN  
R.C.E. NO.12512 DATE: 06/05

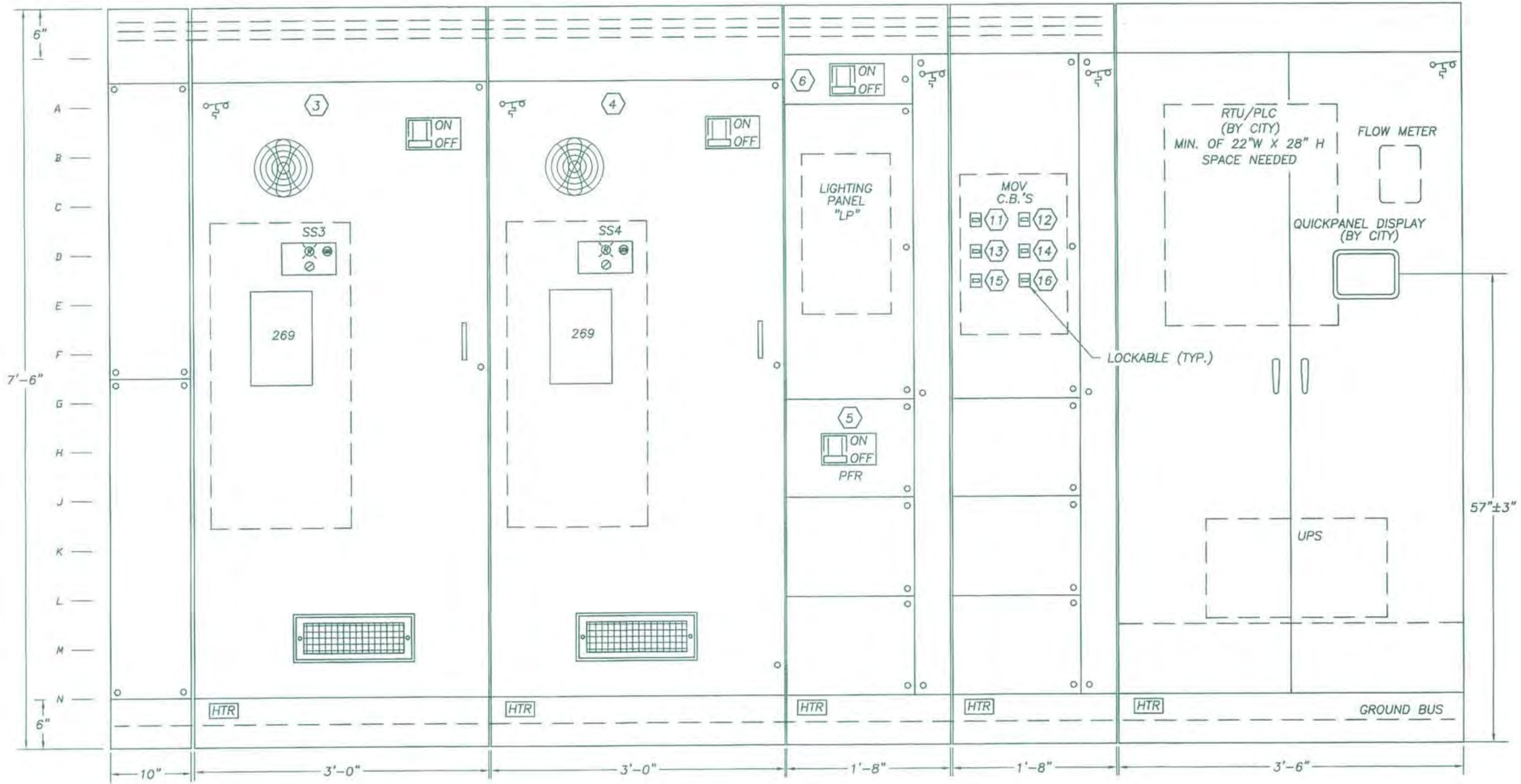
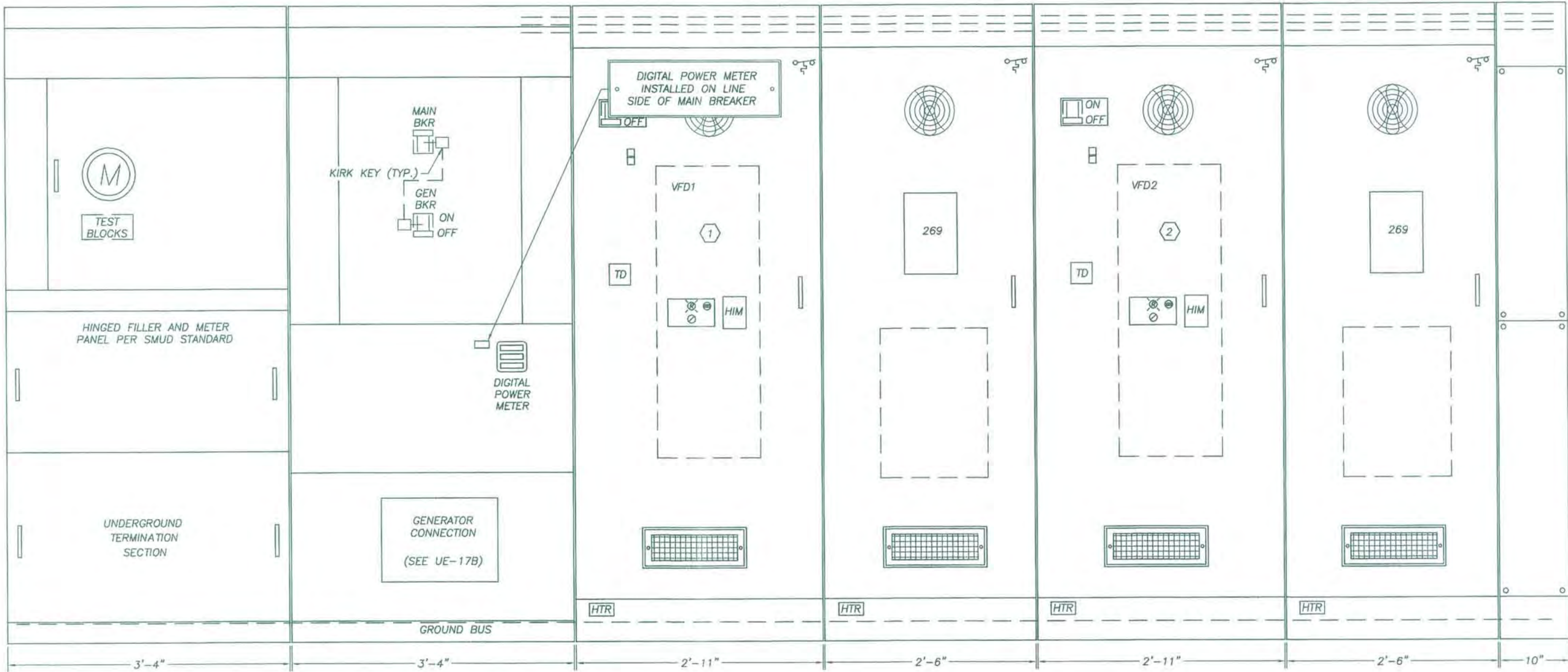
IMPROVEMENT PLANS FOR:  
ELKHORN RESERVOIR  
SINGLE LINE DIAGRAM

PLANNING NO.	DWG. NO.
PN: ZJ36	E-2
DRAWING NO.	SHEET
	36
GIS GRID NO.	OF
	54



ELKHORN RESERVOIR  
S:\ELECTRICAL DRAWINGS\ELKHORN RESERVOIR\Elkhorn\_E-02-03.dwg

**SWITCHBOARD AND MCC ELEVATION**  
SCALE: N.T.S.



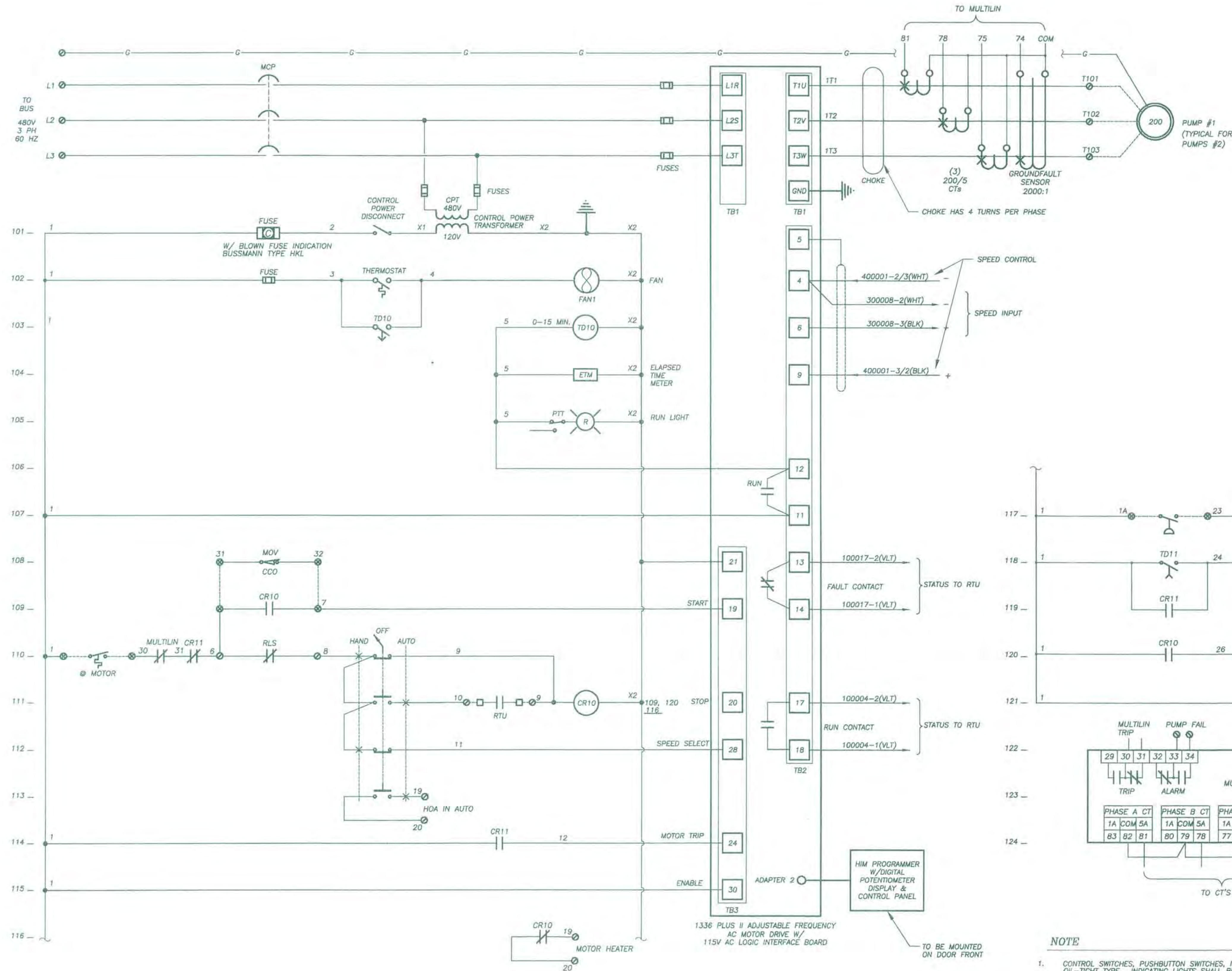
- NOTES:
1. NAME PLATES SHALL BE PROVIDED FOR ALL ELEMENTS ON BOTH FRONT PANEL AND BACK PAN.
  2. ONLY MAJOR ELEMENTS ARE SHOWN ON THE DRAWING. CONTRACTOR SHALL BE RESPONSIBLE TO MAKE ALL ELEMENTS FIT INSIDE THE PANEL.
  3. ALL METERS AND DISPLAYS SHALL BE MOUNTED A MINIMUM OF 40" TO A MAXIMUM OF 60" FROM THE BOTTOM OF THE PANEL.



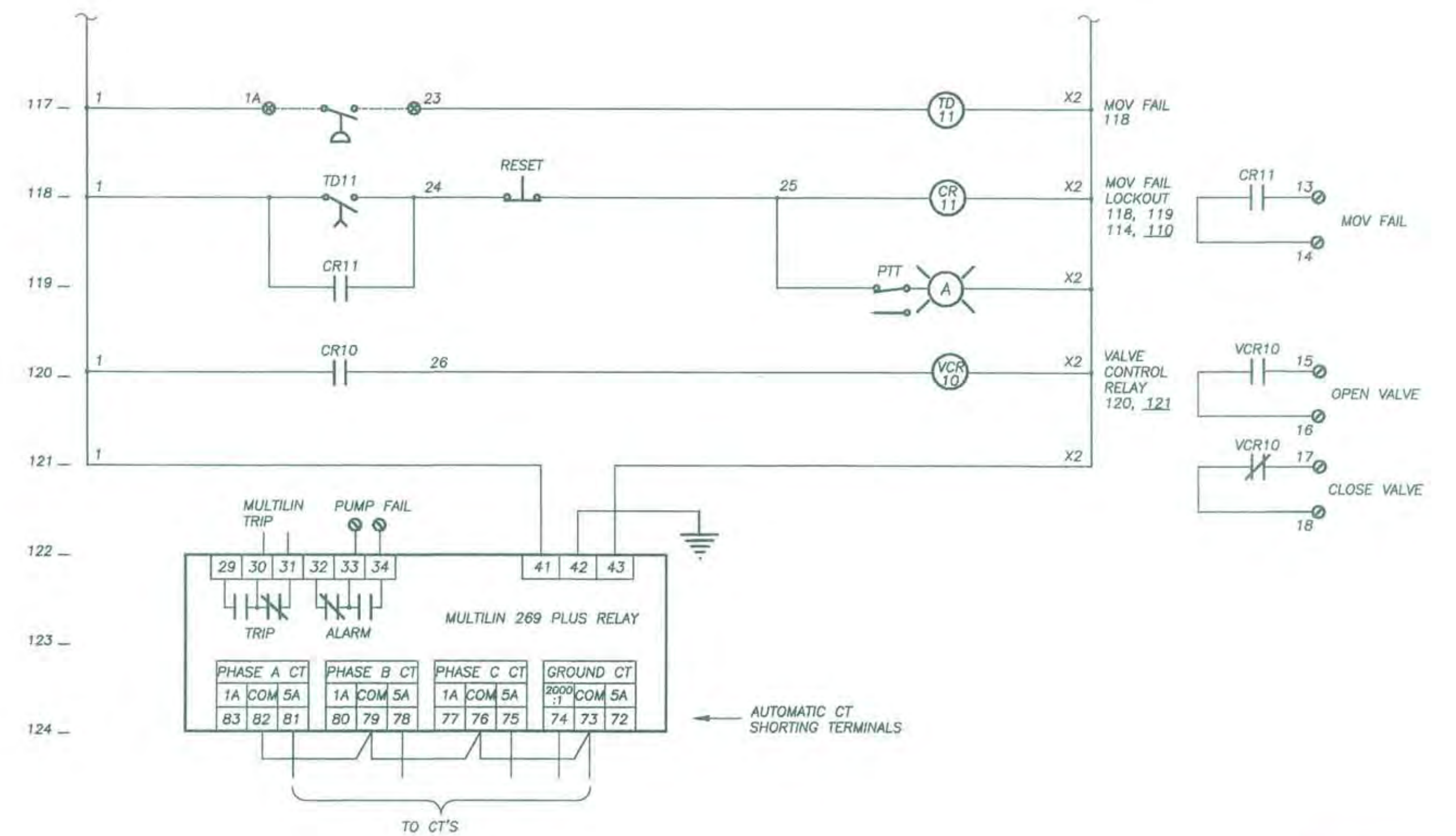
PN: ZJ36	REVISIONS			BENCH MARK DESCRIPTION: _____ ELEV. _____	FIELD BOOK SCALE: _____ H: N/A V: N/A	1" ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"	CITY OF SACRAMENTO DEPARTMENT OF UTILITIES			IMPROVEMENT PLANS FOR: <b>ELKHORN RESERVOIR</b> <b>SWITCHBOARD AND MCC ELEVATION AND PLAN</b>			PLANNING NO. _____	DWG. NO. <b>E-3</b>
	NO.	DESCRIPTION	DATE				BY	DRAWN BY: Q. NHAM	DESIGNED BY: J. ZHUANG	CHECKED BY: D. HANSEN	PN: ZJ36	SHEET <b>37</b>		
								DATE: 06/05	R.C.E. NO. 14584 DATE: 06/05	R.C.E. NO. 12512 DATE: 06/05	DRAWING NO.	OF <b>54</b>		
											GIS GRID NO.			



ELKHORN RESERVOIR  
S:\ELECTRICAL DRAWINGS\ELKHORN RESERVOIR\Elkhorn\_E-04-06.dwg



**PUMP #1 CONTROL SCHEMATIC DIAGRAM**  
TYPICAL FOR PUMP 2  
DEVICE DESIGNATIONS TO BE CONSISTANT W/PUMP #  
(EXAMPLE: TD20 FOR PUMP #2)



**NOTE**

- CONTROL SWITCHES, PUSHBUTTON SWITCHES, INDICATING LIGHTS SHALL BE HEAVY DUTY OIL-TIGHT TYPE. INDICATING LIGHTS SHALL BE PUSH TO TEST, LED TYPE. CONTROL RELAYS SHALL BE 10A, 120V, WITH INDICATE LIGHT WITH CYCLOMETER REGISTER INCREMENTS OF 0.1 HOURS UP TO 99999.9 HOURS. ELAPSED TIME METER (ETM) SHALL BE SYNCHRONOUS MOTOR DRIVEN TYPE. MANUAL RESET SHALL NOT BE PROVIDED.

PN: ZJ36

REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK	ELEV.
DESCRIPTION:	

FIELD BOOK
SCALE:
H: N/A
V: N/A



CITY OF SACRAMENTO		
DEPARTMENT OF UTILITIES		
DRAWN BY: Q. NHAM	DESIGNED BY: J. ZHUANG	CHECKED BY: D. HANSEN
DATE: 06/05	R.C.E. NO.14584 DATE: 06/05	R.C.E. NO.12512 DATE: 06/05

IMPROVEMENT PLANS FOR:  
**ELKHORN RESERVOIR**  
**CONTROL SCHEMATIC DIAGRAMS**

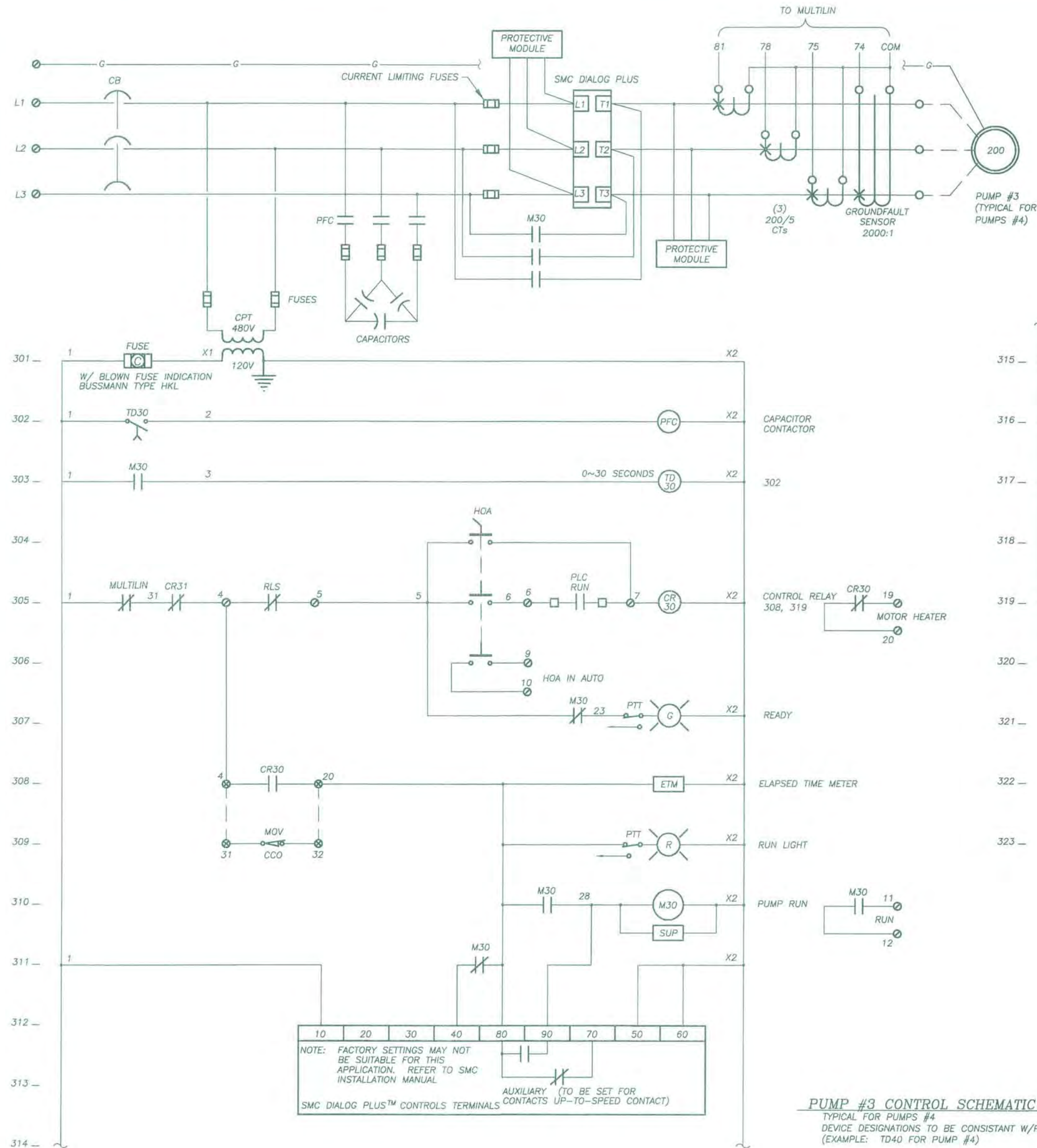
PLANNING NO.	DWG. NO.
PN: ZJ36	E-4
DRAWING NO.	SHEET
	38
GIS GRID NO.	OF
	54



ELKHORN RESERVOIR

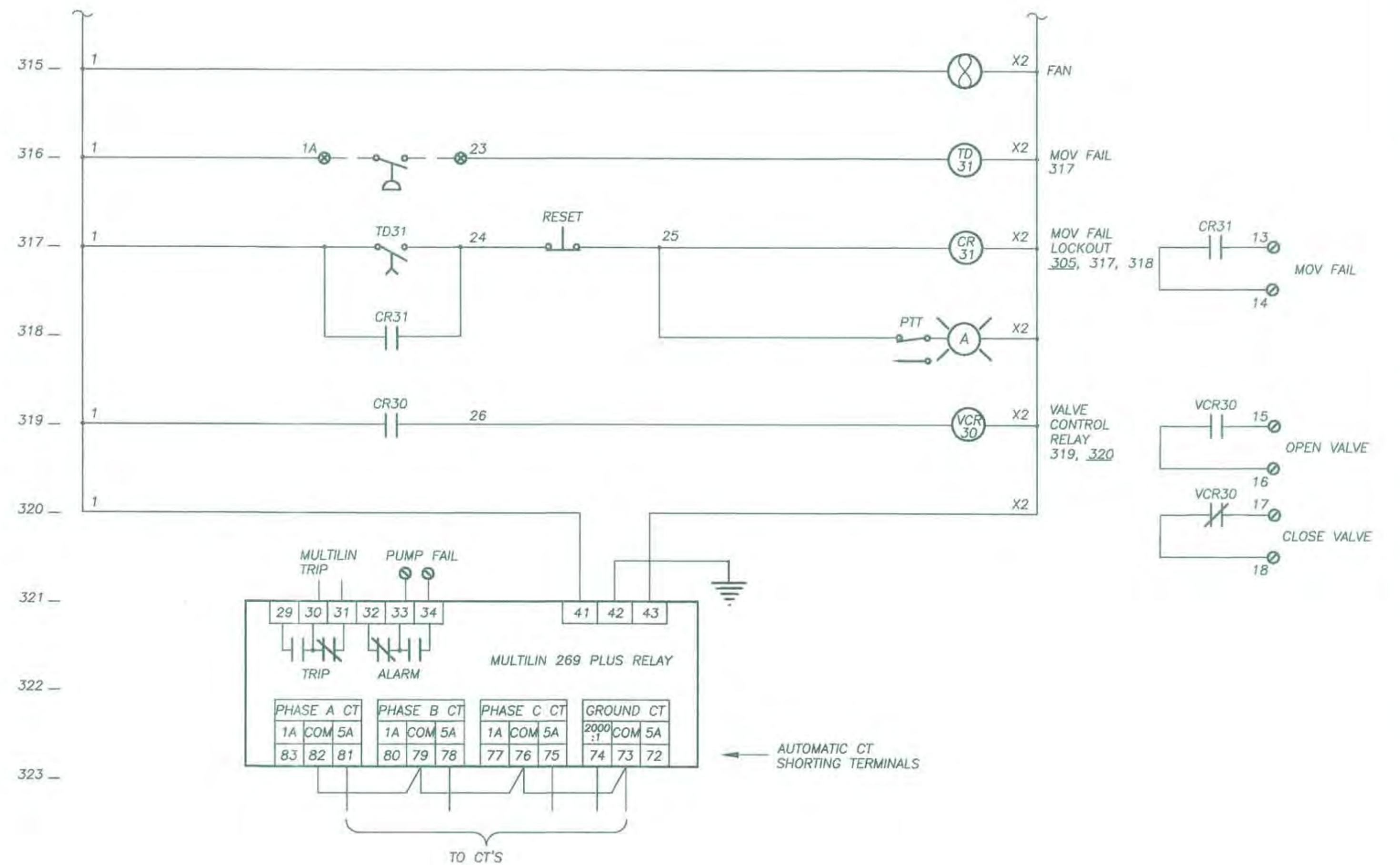


ELKHORN RESERVOIR  
SA\ELECTRICAL DRAWINGS\ELKHORN RESERVOIR\Elkhorn\_E-04-06.dwg



**PUMP #3 CONTROL SCHEMATIC DIAGRAM**

TYPICAL FOR PUMPS #4  
DEVICE DESIGNATIONS TO BE CONSISTANT W/PUMP #  
(EXAMPLE: TD40 FOR PUMP #4)



**NOTE**

- CONTROL SWITCHES, PUSHBUTTON SWITCHES, INDICATING LIGHTS SHALL BE HEAVY DUTY OIL-TIGHT TYPE. INDICATING LIGHTS SHALL BE PUSH TO TEST TYPE. CONTROL RELAYS SHALL BE 10A, 120V, WITH INDICATE LIGHT. ELAPSED TIME METER (ETM) SHALL BE SYNCHRONOUS MOTOR DRIVEN TYPE WITH CYCLOMETER REGISTER INCREMENTS OF 0.1 HOURS UP TO 99999.9 HOURS. MANUAL RESET SHALL NOT BE PROVIDED.
- IF CURRENT LIMITING FUSES ARE USED FOR THE PROTECTION OF THE SOFT STARTER THE BYPASS STARTER SHALL BE CONNECTED ON THE LINE SIDE OF THE CURRENT LIMITING FUSES.

PN: ZJ36

REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK		ELEV.
DESCRIPTION:		

FIELD BOOK	
SCALE:	
H: N/A	
V: N/A	



CITY OF SACRAMENTO  
DEPARTMENT OF UTILITIES

DRAWN BY: Q. NHAM	DESIGNED BY: J. ZHUANG	CHECKED BY: D. HANSEN
DATE: 06/05	R.C.E. NO.14584 DATE: 06/05	R.C.E. NO.12512 DATE: 06/05


IMPROVEMENT PLANS FOR:  
**ELKHORN RESERVOIR**  
**CONTROL SCHEMATIC DIAGRAMS**

PLANNING NO.	DWG. NO.
PN: ZJ36	E-5
DRAWING NO.	SHEET
	39
GIS GRID NO.	OF
	54





ELKHORN RESERVOIR  
S:\ELECTRICAL DRAWINGS\ELKHORN RESERVOIR\ELKHORN\_E-08-E-11.dwg

PN: ZJ36

REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK	ELEV.
DESCRIPTION:	

FIELD BOOK
SCALE:
H: N/A
V: N/A
ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"

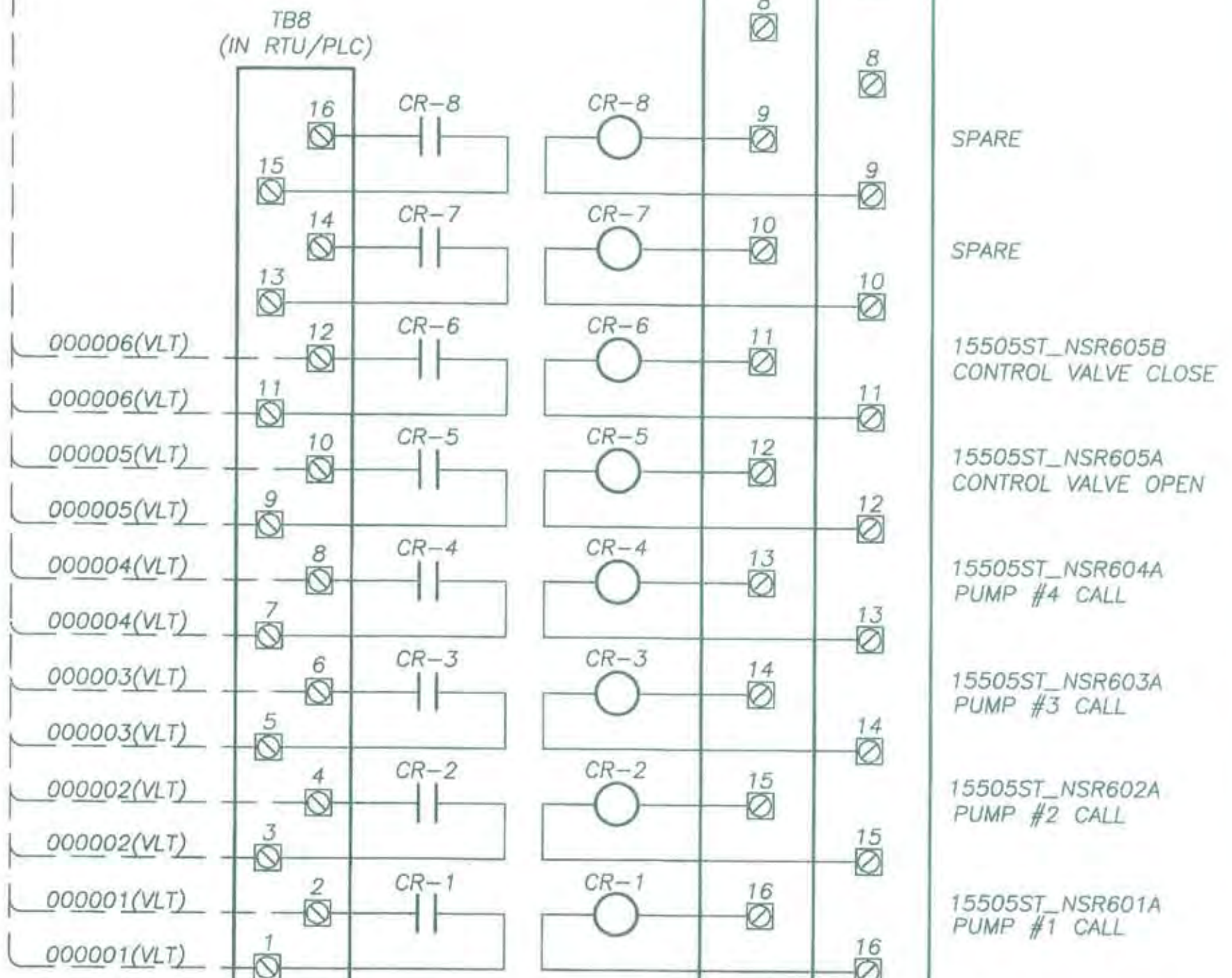
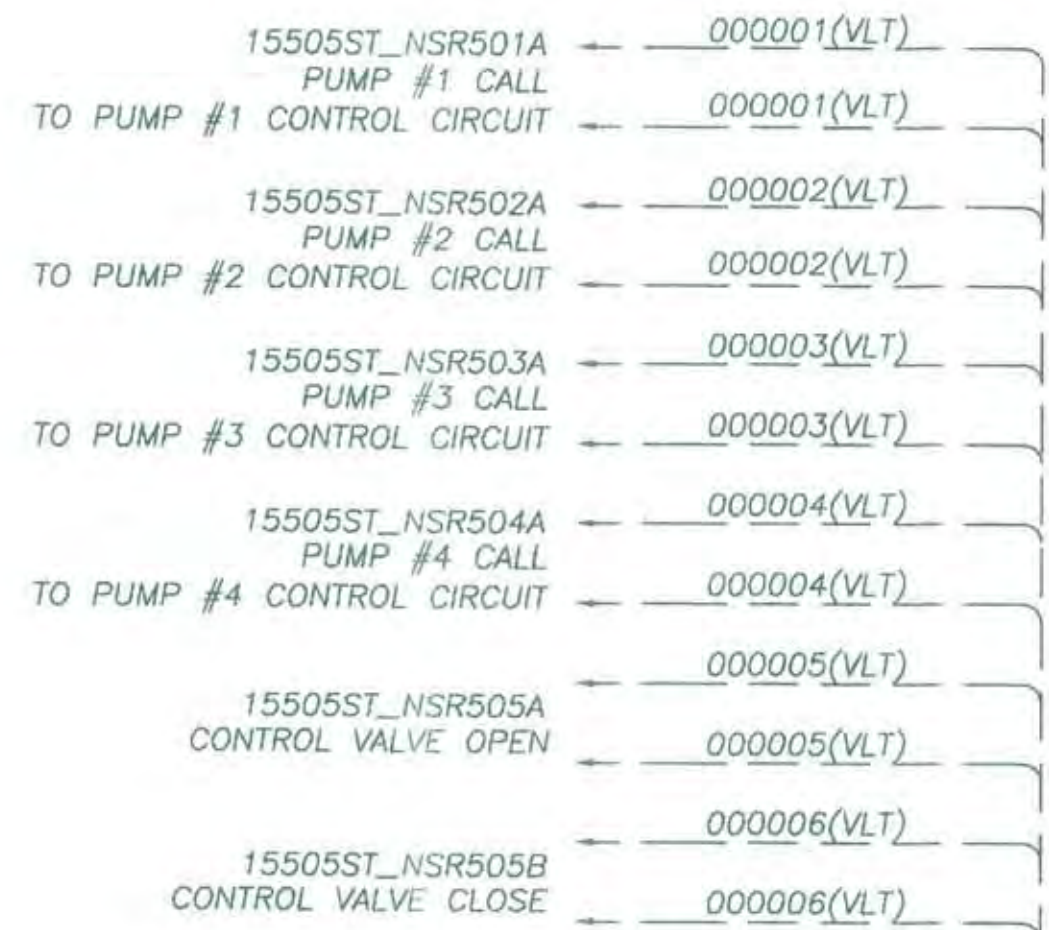
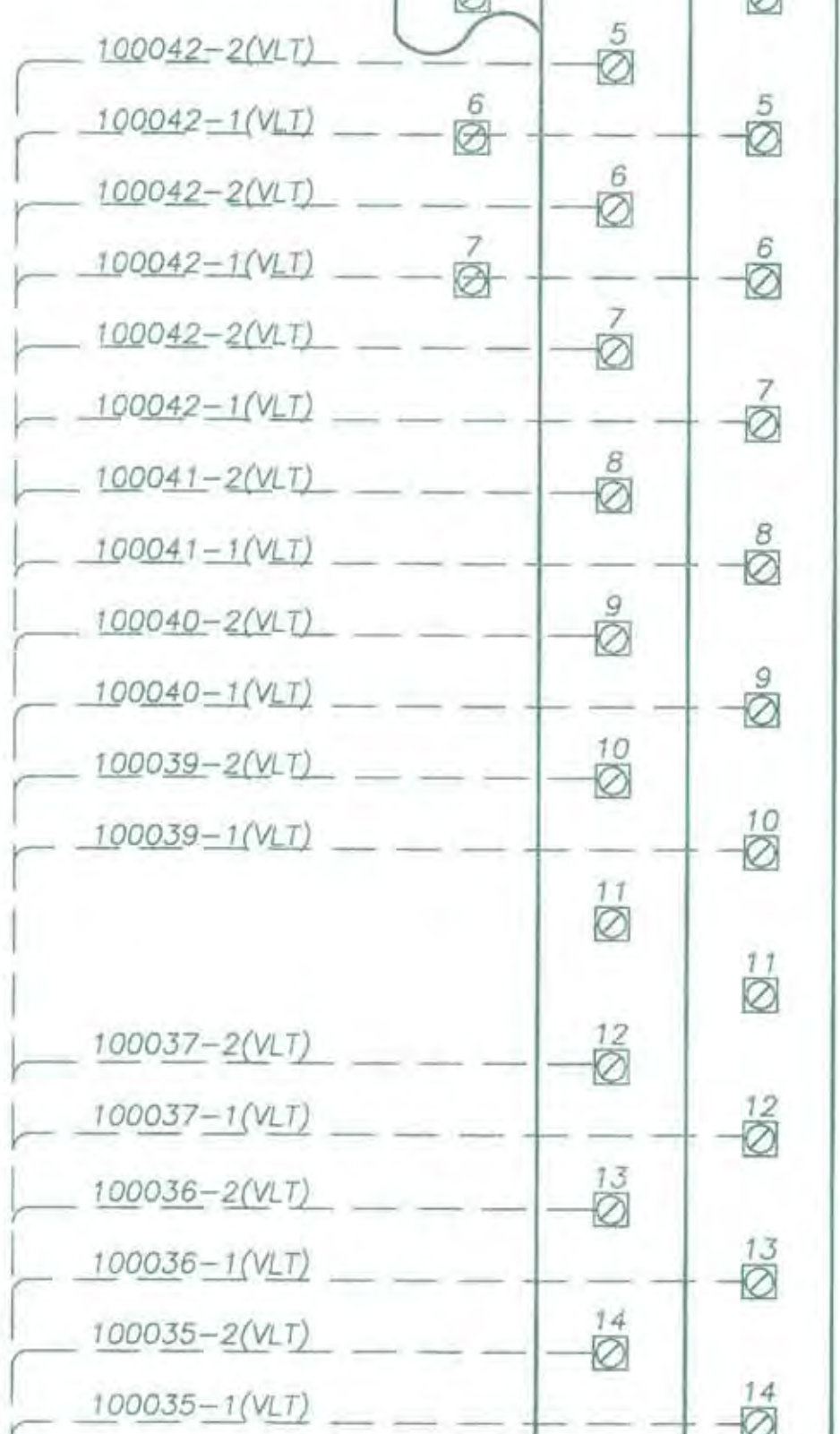
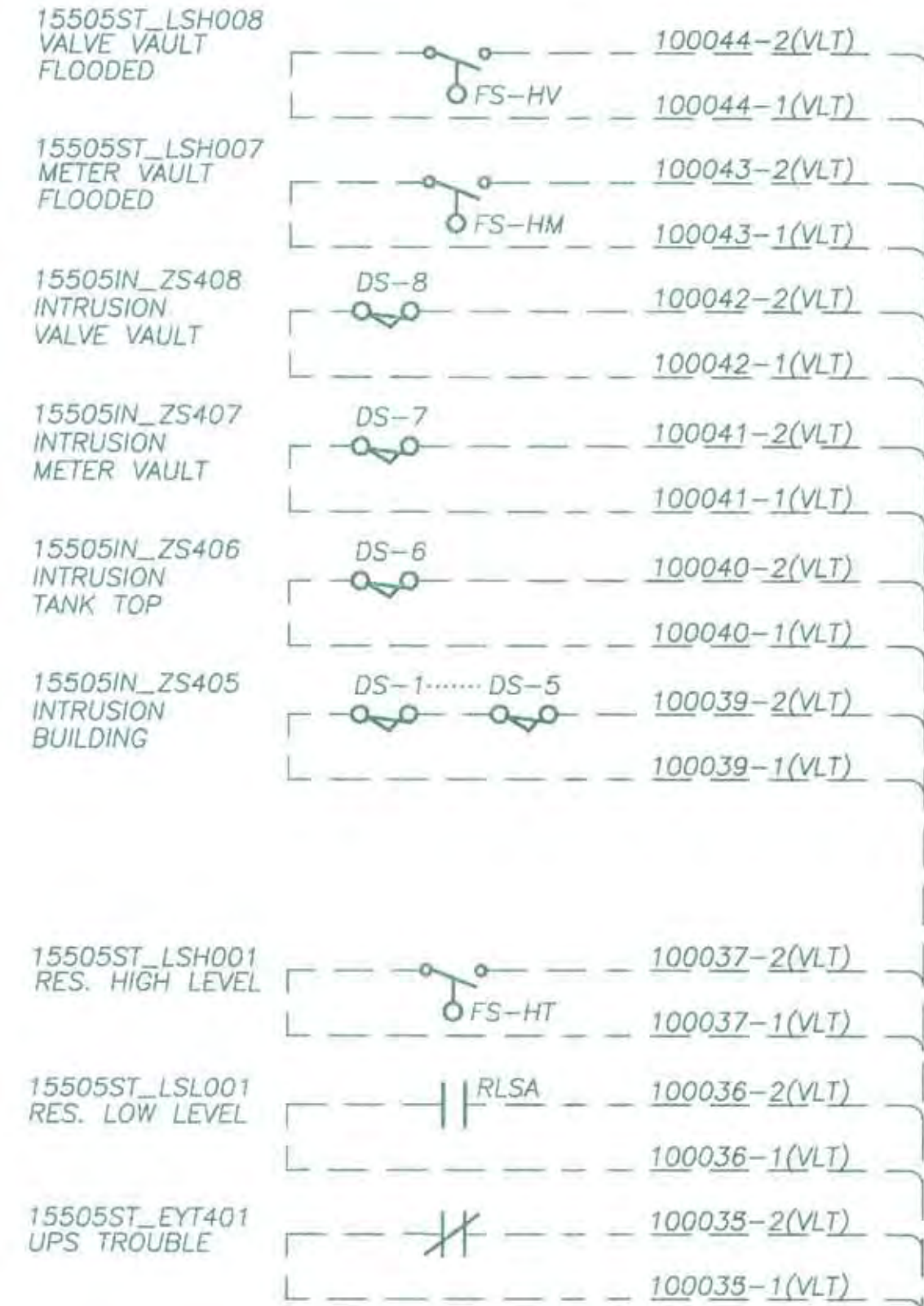
CITY OF SACRAMENTO DEPARTMENT OF UTILITIES
DRAWN BY: Q. NHAM
DATE: 06/05

DESIGNED BY: J. ZHUANG
R.C.E. NO.14584 DATE: 06/05

CHECKED BY: D. HANSEN
R.C.E. NO.12512 DATE: 06/05

IMPROVEMENT PLANS FOR:
ELKHORN RESERVOIR
DISCRETE I/O INTERCONNECTION DIAGRAM

PLANNING NO.	DWG. NO.
PN: ZJ36	E-9
DRAWING NO.	SHEET
	43
GIS GRID NO.	OF
	54

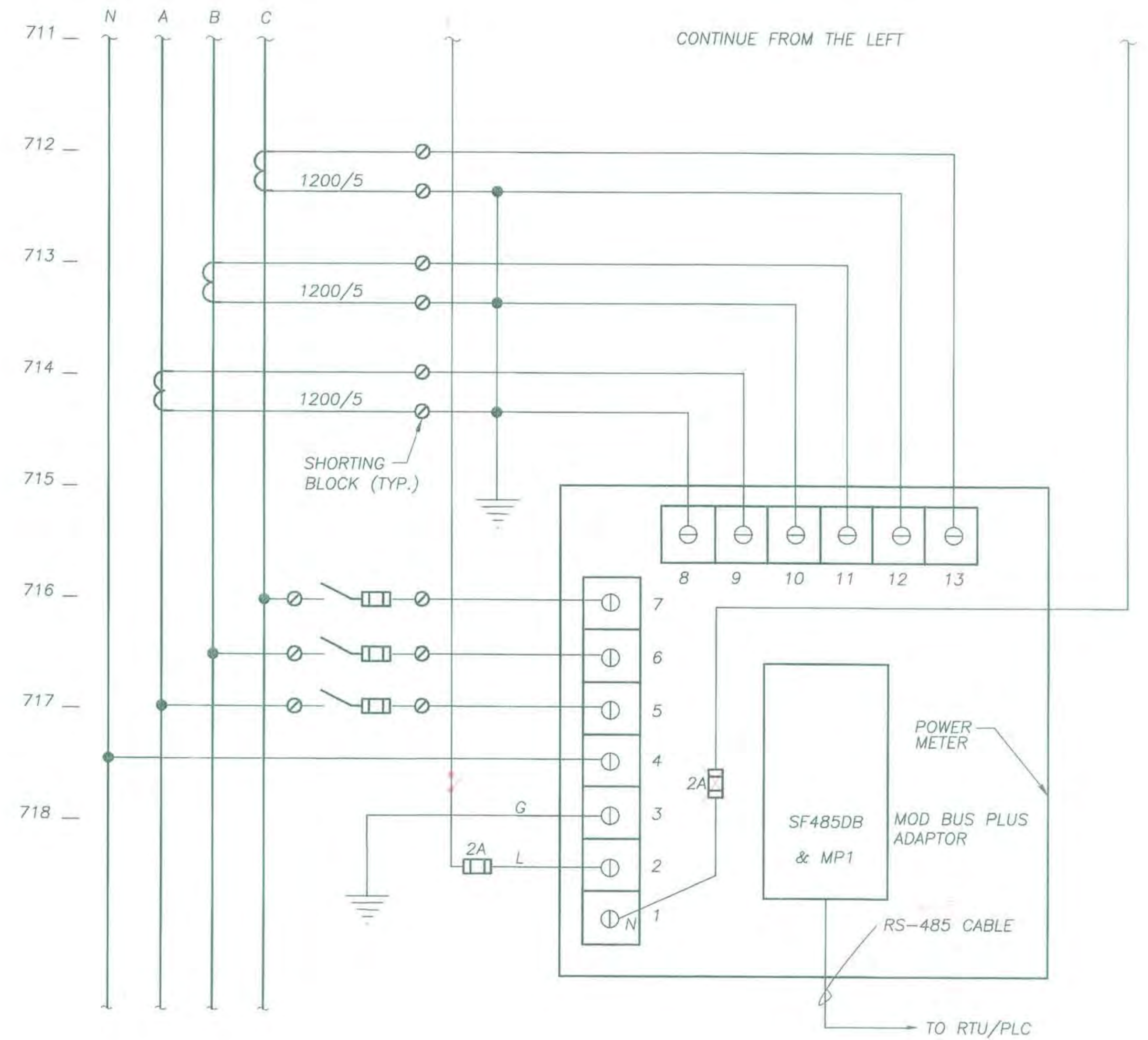
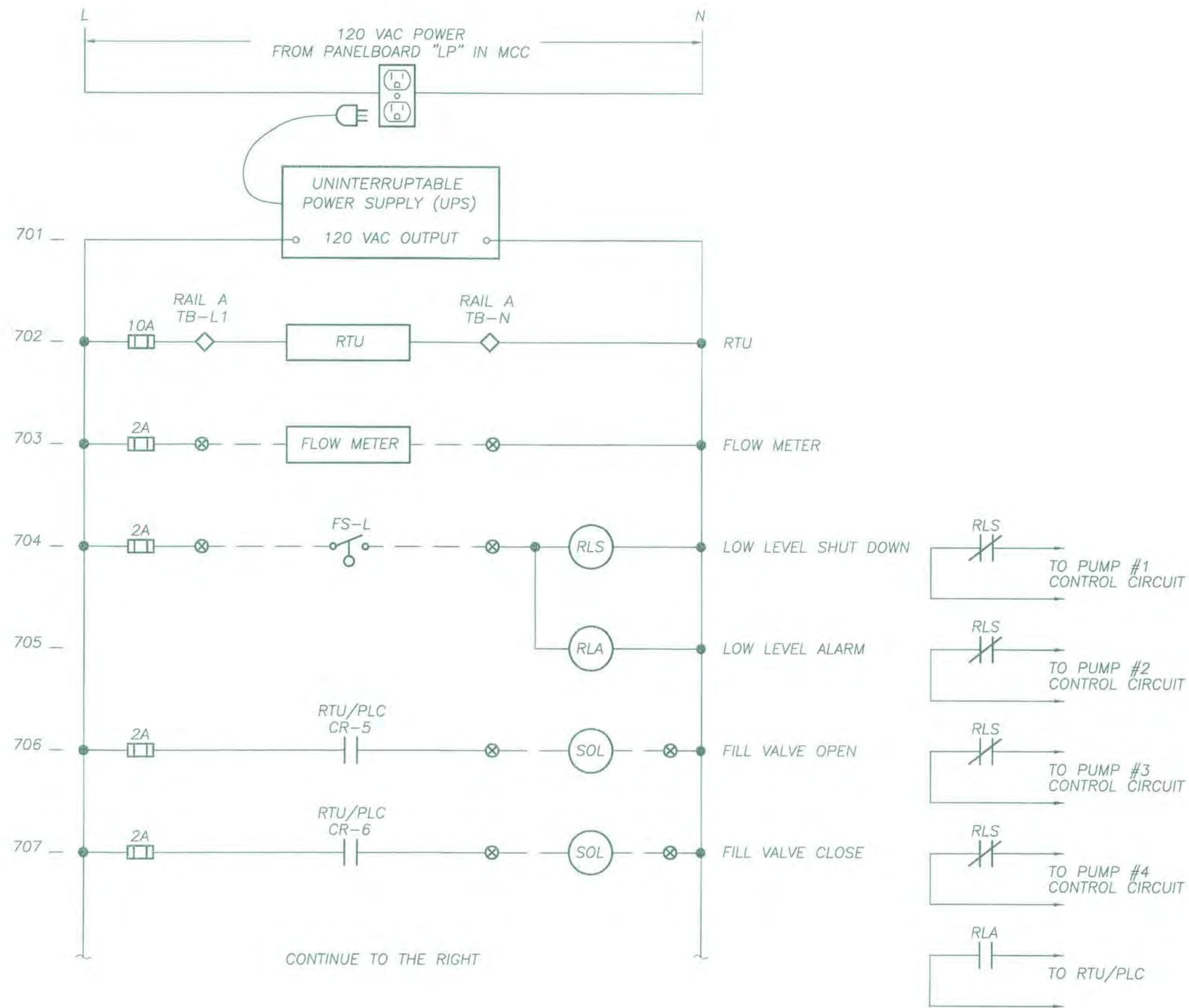


- NOTES:
- CONTRACTOR SHALL FURNISH, INSTALL AND CONNECT ALL THE WIRES.
  - TERMINAL BLOCKS IN CONTROL PANEL SHALL BE BACK PAN & DIN RAIL MOUNTED.





ELKHORN RESERVOIR  
S:\ELECTRICAL DRAWINGS\ELKHORN RESERVOIR\ELKHORN\_E-07.dwg



### INSTRUMENTATION CONTROL SCHEMATIC

PN: ZJ36	REVISIONS			BENCH MARK DESCRIPTION:	ELEV.	FIELD BOOK	SCALE: H: N/A V: N/A	ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"	CITY OF SACRAMENTO DEPARTMENT OF UTILITIES	DRAWN BY: Q. NHAM DATE: 06/05	DESIGNED BY: J. ZHUANG R.C.E. NO. 14584 DATE: 06/05	CHECKED BY: D. HANSEN R.C.E. NO. 12512 DATE: 06/05	IMPROVEMENT PLANS FOR: ELKHORN RESERVOIR INSTRUMENTATION CONTROL SCHEMATIC DIAGRAM	PLANNING NO. PN: ZJ36	DWG. NO. E-7	SHEET 41 OF 54
	NO.	DESCRIPTION	DATE													
	DATE	BY														



ELKHORN RESERVOIR  
S:\ELECTRICAL DRAWINGS\ELKHORN RESERVOIR\Elkhorn\_E-08-E-11.dwg

PN: ZJ36

REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK	ELEV.
DESCRIPTION:	

FIELD BOOK
SCALE:
H: N/A
V: N/A
ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"



CITY OF SACRAMENTO			
DEPARTMENT OF UTILITIES			
DRAWN BY: Q. NHAM	DESIGNED BY: J. ZHUANG	CHECKED BY: D. HANSEN	
DATE: 06/05	R.C.E. NO.14584 DATE: 06/05	R.C.E. NO.12512 DATE: 06/05	

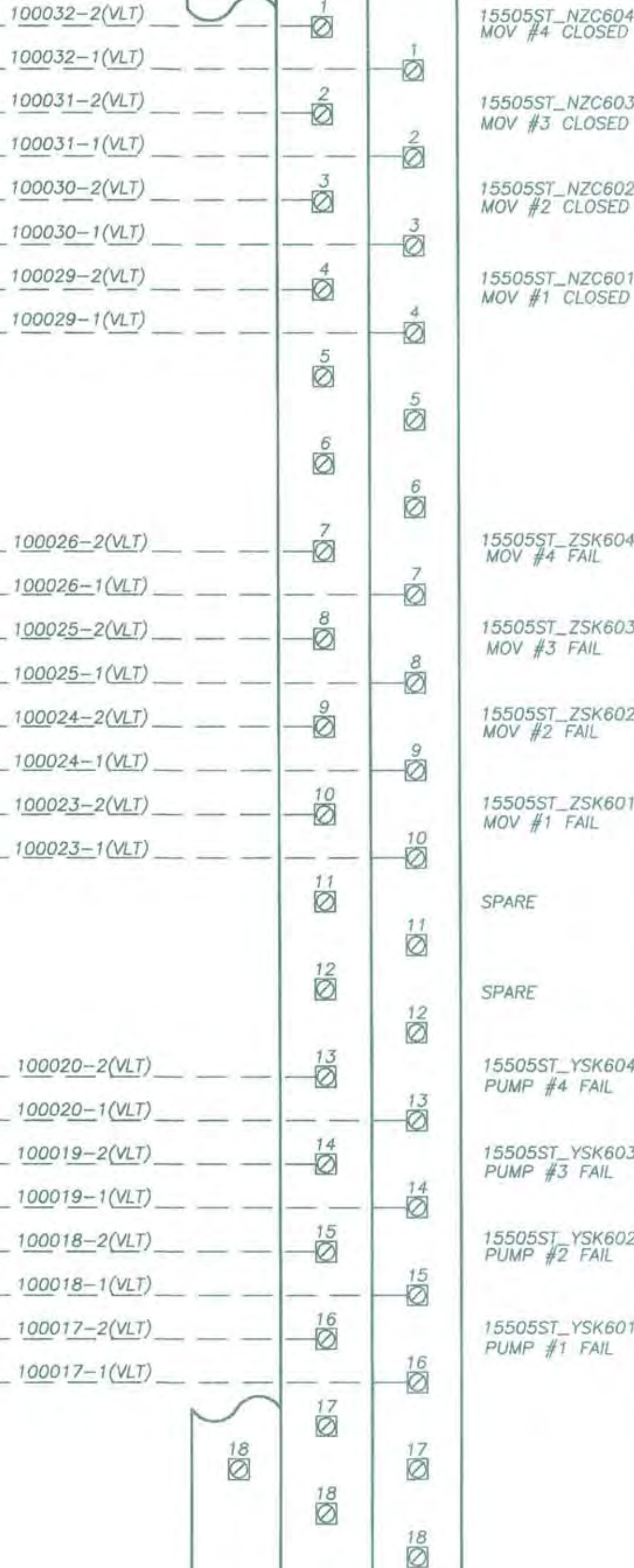
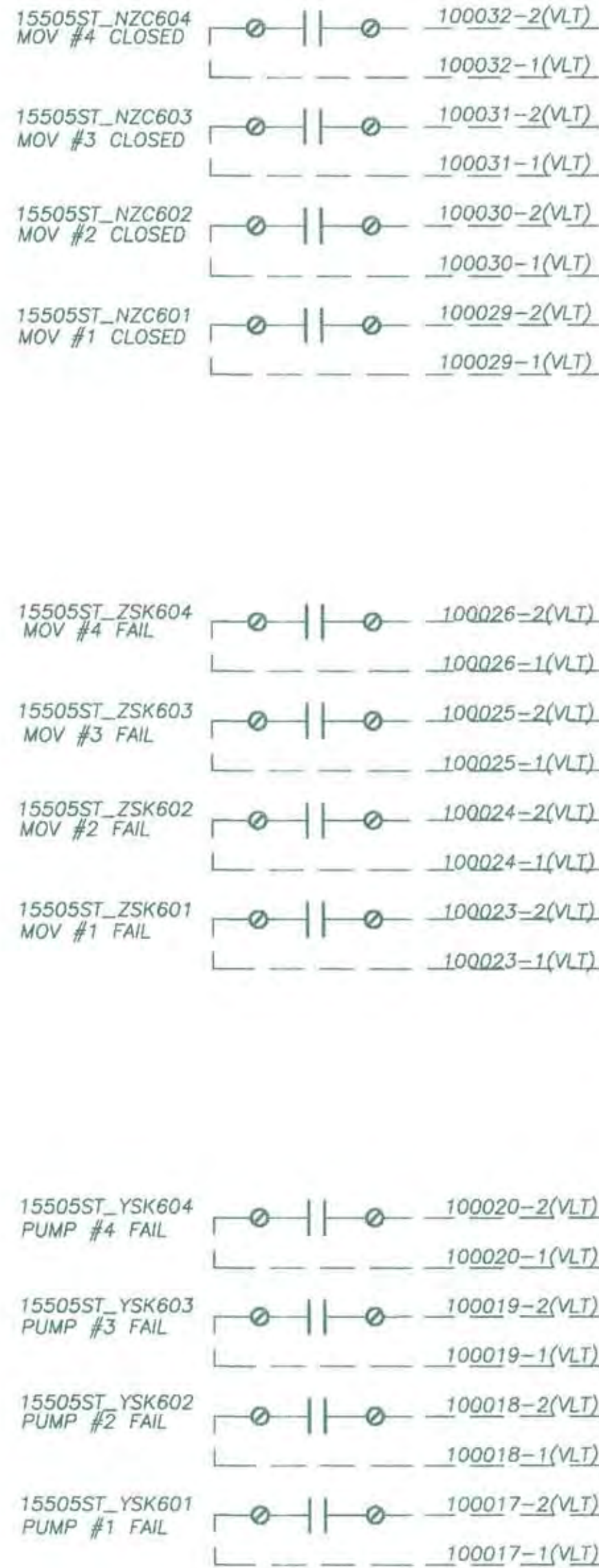
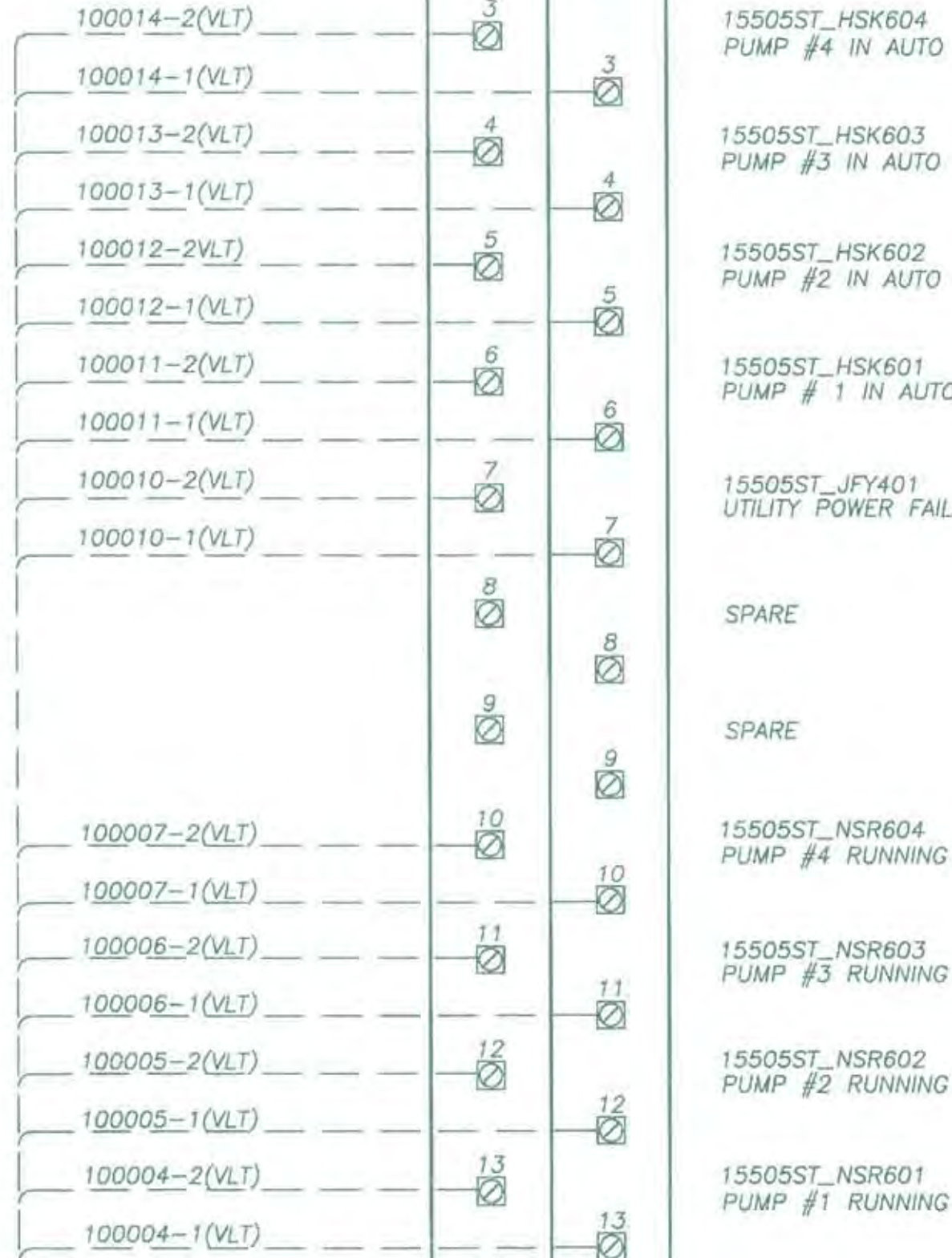
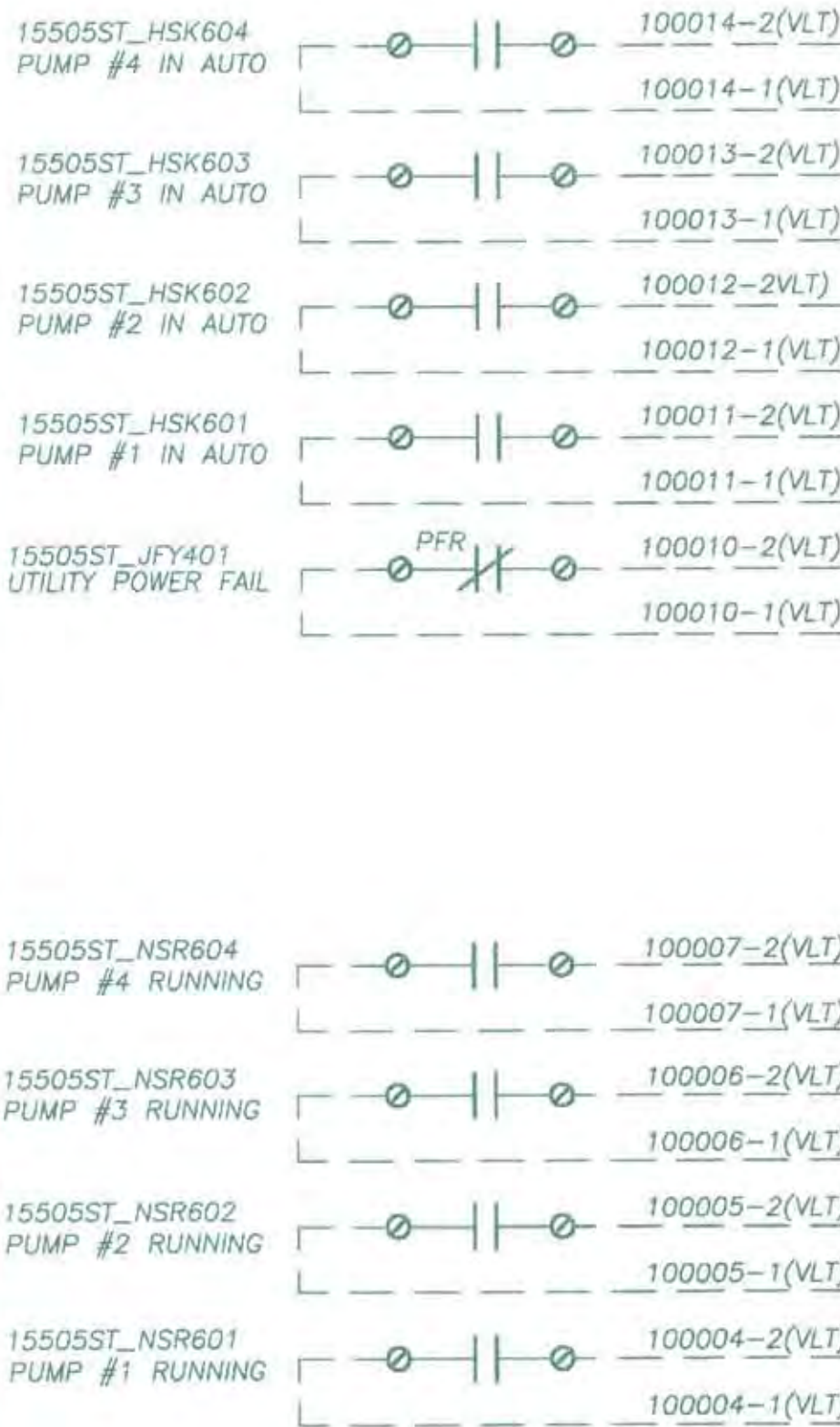
- NOTES:
- CONTRACTOR SHALL FURNISH, INSTALL AND CONNECT ALL THE WIRES.
  - TERMINAL BLOCKS IN CONTROL PANEL SHALL BE BACK PAN & DIN RAIL MOUNTED.

IMPROVEMENT PLANS FOR:  
**ELKHORN RESERVOIR**  
**DISCRETE I/O INTERCONNECTION DIAGRAM**

PLANNING NO.	DWG. NO.
PN: ZJ36	E-8
DRAWING NO.	SHEET
	42
GIS GRID NO.	OF
	54



ELKHORN RESERVOIR





ELKHORN RESERVOIR  
S:\ELECTRICAL DRAWINGS\ELKHORN RESERVOIR\ELKHORN\_E-08-E-11.dwg

PN: ZJ36

REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK	ELEV.
DESCRIPTION:	

FIELD BOOK
SCALE:
H: N/A
V: N/A
ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"

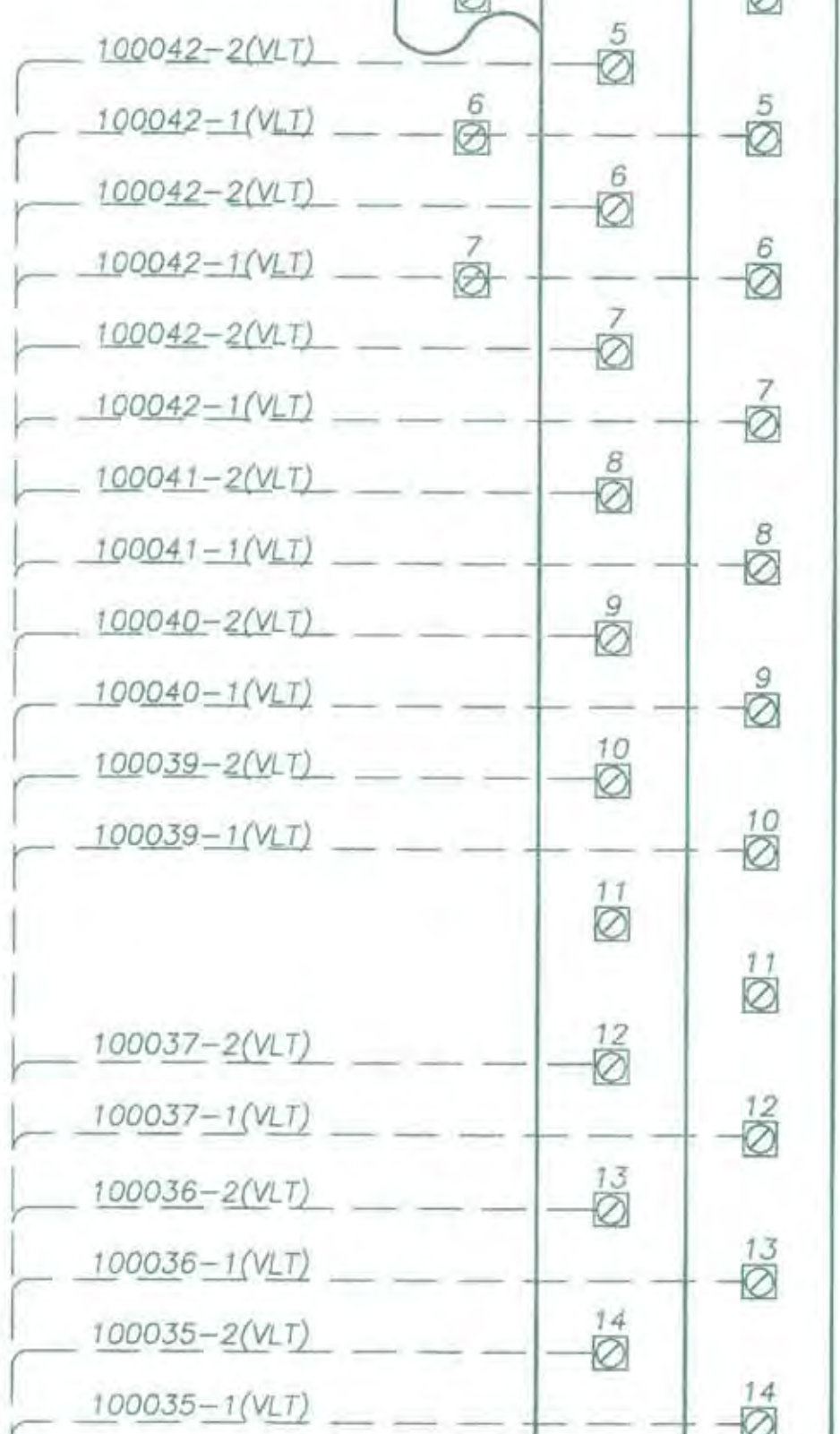
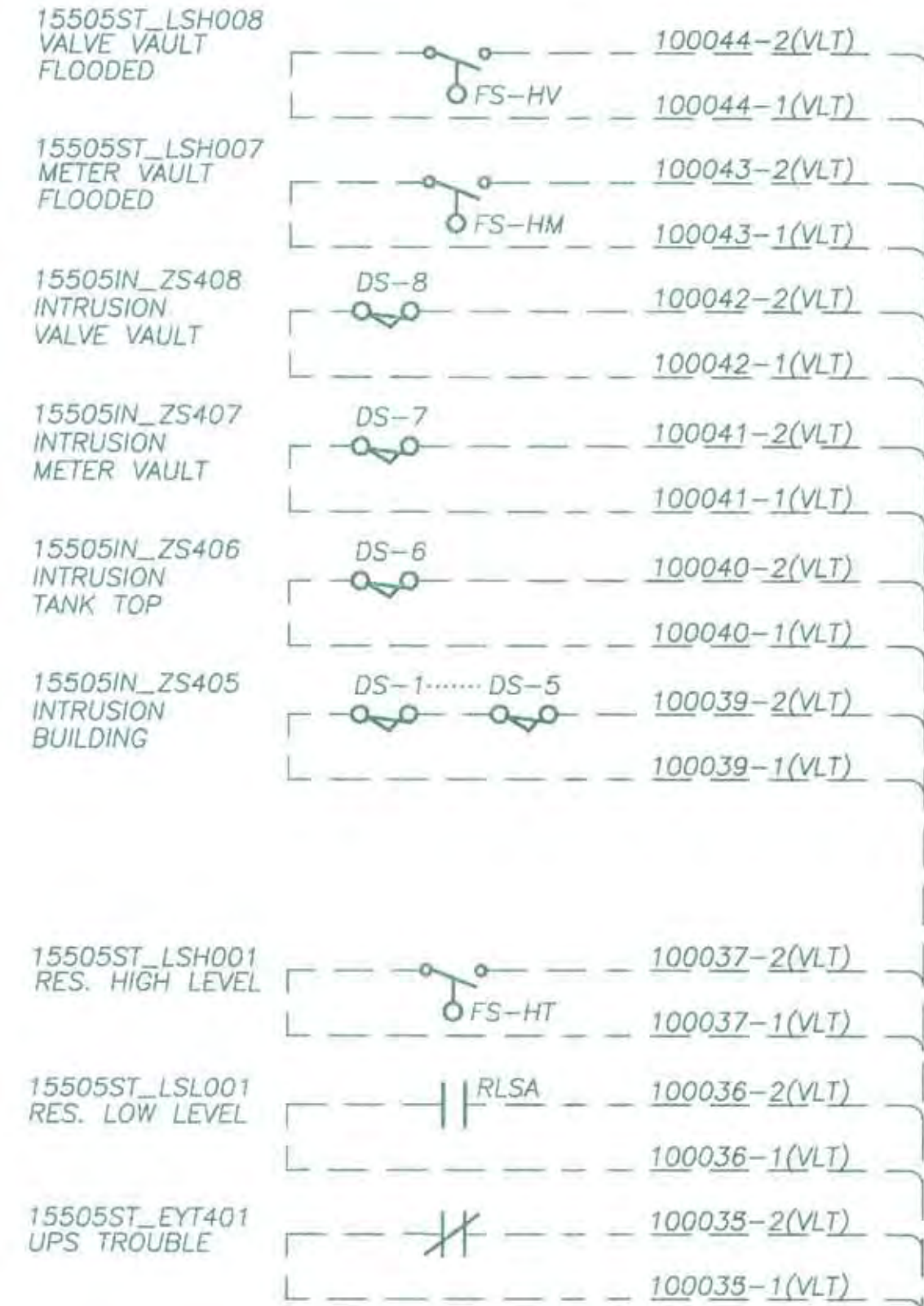
CITY OF SACRAMENTO DEPARTMENT OF UTILITIES
DRAWN BY: Q. NHAM
DATE: 06/05

DESIGNED BY: J. ZHUANG
R.C.E. NO.14584 DATE: 06/05

CHECKED BY: D. HANSEN
R.C.E. NO.12512 DATE: 06/05

IMPROVEMENT PLANS FOR:	
ELKHORN RESERVOIR	
DISCRETE I/O INTERCONNECTION DIAGRAM	

PLANNING NO.	DWG. NO.
PN: ZJ36	E-9
DRAWING NO.	SHEET
	43
GIS GRID NO.	OF
	54



15505ST\_LSH008  
VALVE VAULT  
FLOODED

15505ST\_LSH007  
METER VAULT  
FLOODED

15505IN\_ZS408  
INTRUSION  
VALVE VAULT

15505IN\_ZS407  
INTRUSION  
METER VAULT

15505IN\_ZS406  
INTRUSION  
TANK TOP

15505IN\_ZS405  
INTRUSION  
BUILDING

SPARE

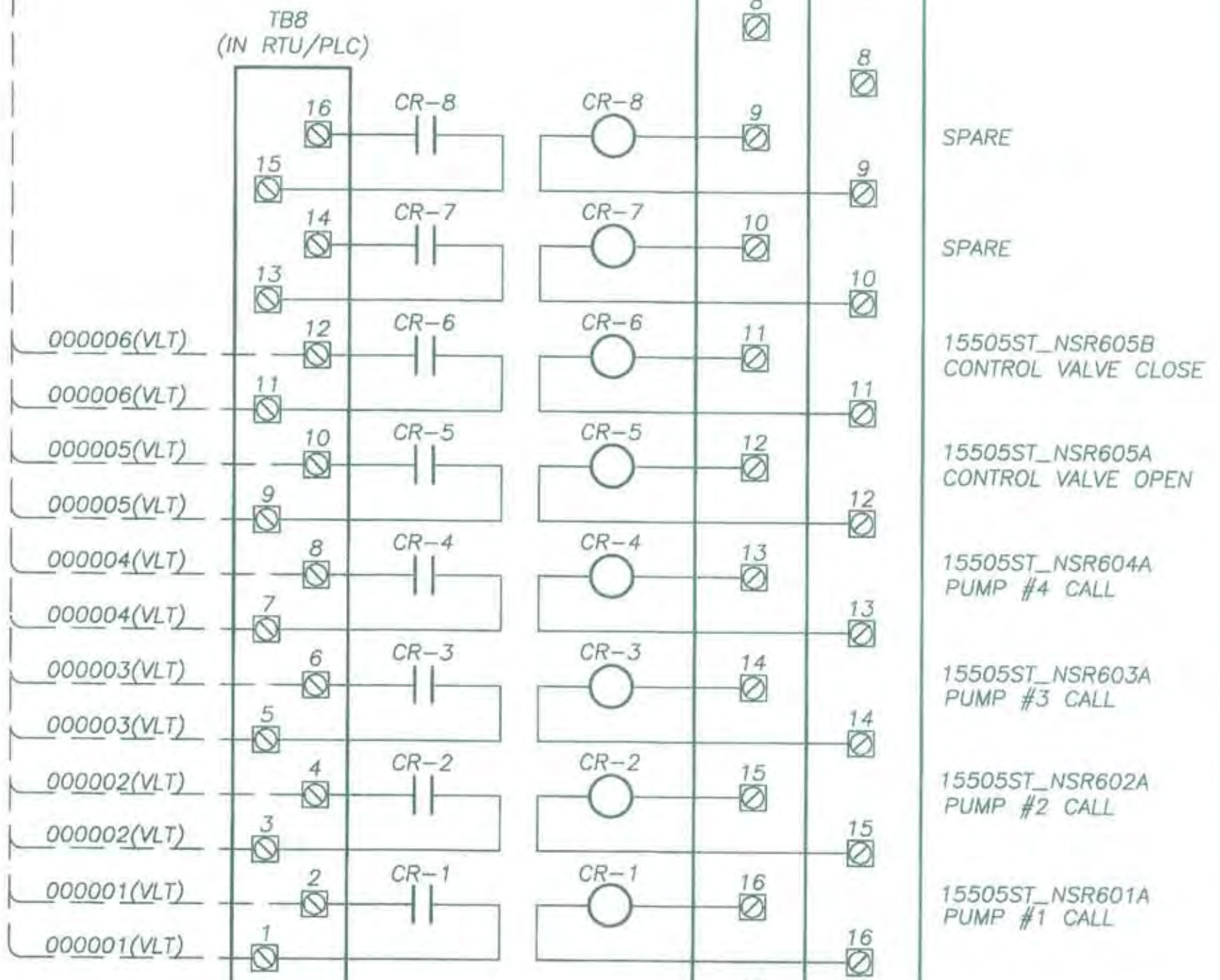
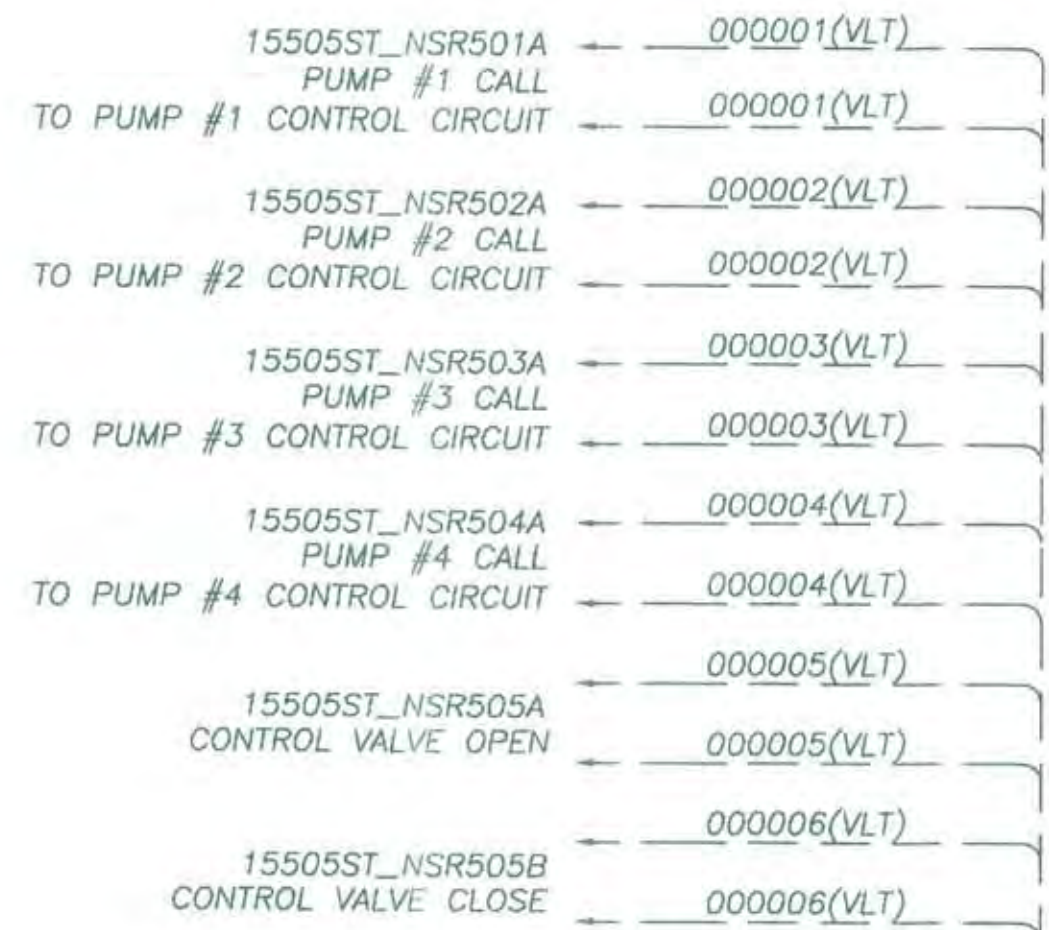
15505ST\_LSH001  
RES. HIGH LEVEL

15505ST\_LSL001  
RES. LOW LEVEL

15505ST\_EYT401  
UPS TROUBLE

SPARE

SPARE

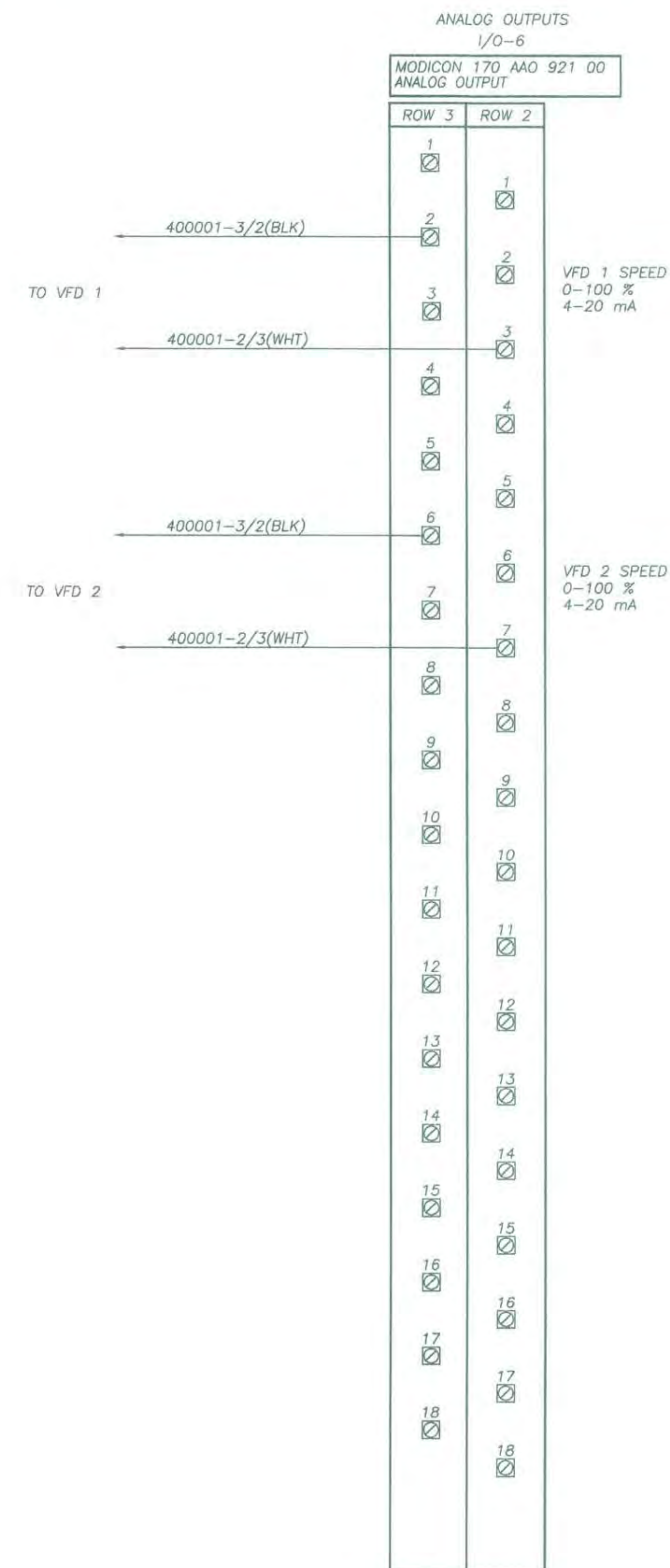
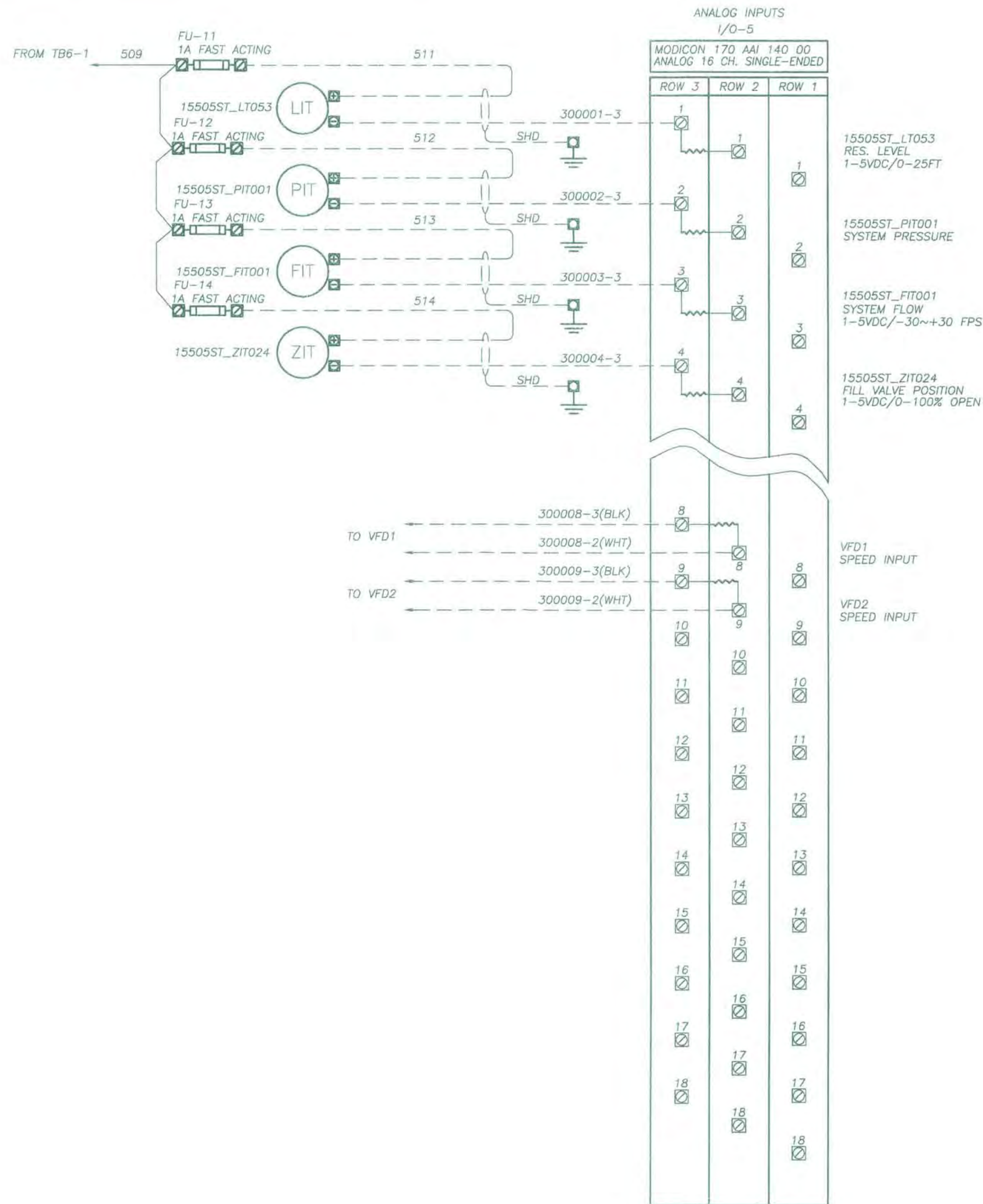


- NOTES:
- CONTRACTOR SHALL FURNISH, INSTALL AND CONNECT ALL THE WIRES.
  - TERMINAL BLOCKS IN CONTROL PANEL SHALL BE BACK PAN & DIN RAIL MOUNTED.





ELKHORN RESERVOIR  
S:\ELECTRICAL DRAWINGS\ELKHORN RESERVOIR\Elkhorn\_E-08-E-11.dwg



- NOTES:
- RTU/PLC FURNISHED BY THE CITY, INSTALLED BY THE CONTRACTOR TO PROVIDE ALL THE CONNECTIONS.
  - 250 OHM RESISTOR SHALL BE 1/4W, 1%.
  - TERMINAL BLOCKS IN CONTROL PANEL SHALL BE BACK PAN AND DIN RAIL MOUNTED.

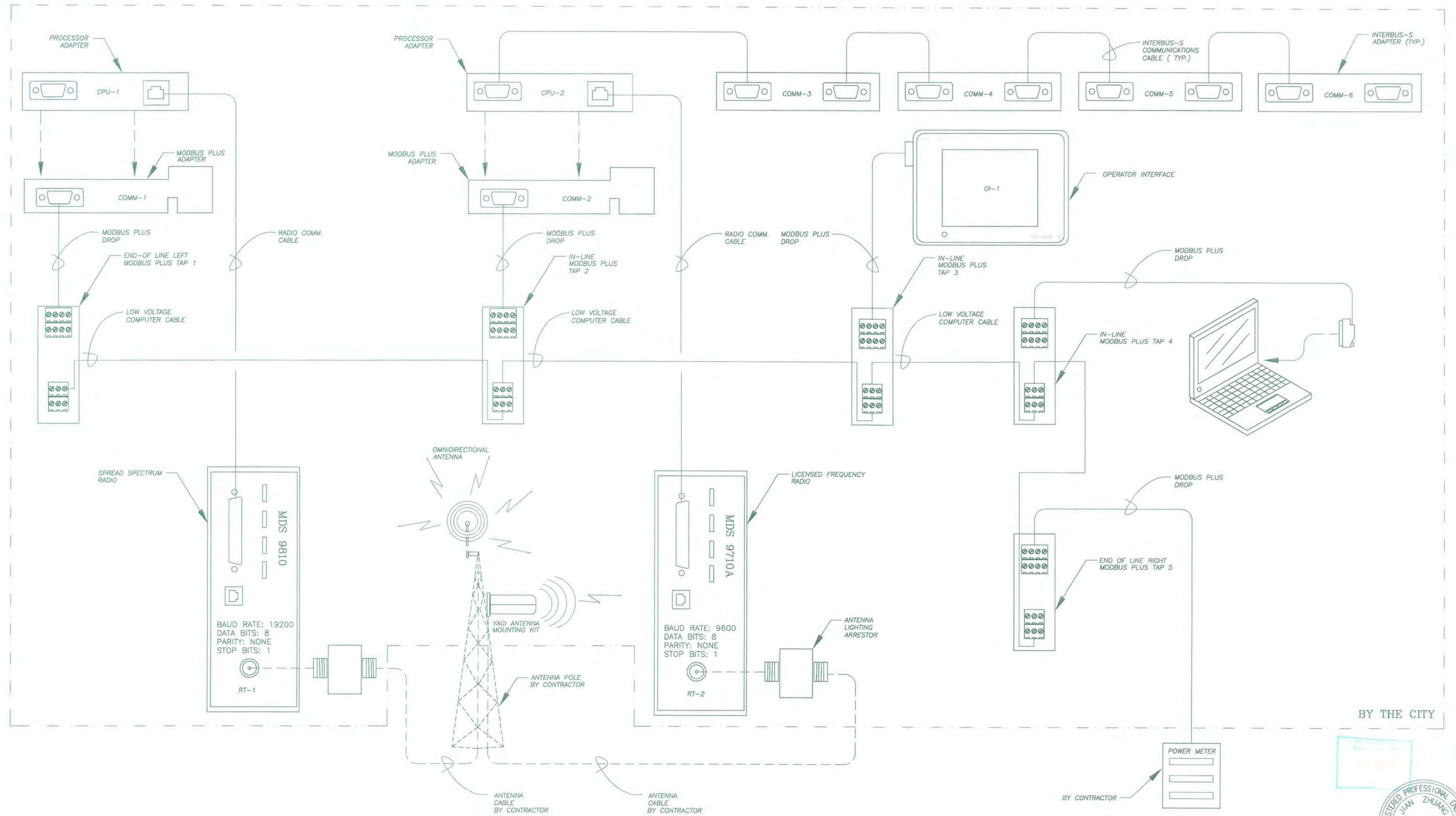
PN: ZJ36	REVISIONS				BENCH MARK DESCRIPTION:	ELEV.	FIELD BOOK	SCALE: ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"	CITY OF SACRAMENTO DEPARTMENT OF UTILITIES	DRAWN BY: Q. NHAM DATE: 06/05	DESIGNED BY: J. ZHUANG R.C.E. NO.14584 DATE: 06/05	CHECKED BY: D. HANSEN R.C.E. NO.12512 DATE: 06/05	IMPROVEMENT PLANS FOR:		PLANNING NO.	DWG. NO. E-10	
													ELKHORN RESERVOIR				SHEET 44
													ANALOG I/O INTERCONNECTION DIAGRAM				



ELKHORN RESERVOIR



ELKHORN RESERVOIR  
S:\ELECTRICAL DRAWINGS\ELKHORN RESERVOIR\Elkhorn\_E-08-E-11.dwg



PN: ZJ36

REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK	ELEV.
DESCRIPTION:	

FIELD BOOK
SCALE:
H: N/A
V: N/A

ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"
DRAWN BY: Q. NHAM
DATE: 06/05

CITY OF SACRAMENTO DEPARTMENT OF UTILITIES
DESIGNED BY: J. ZHUANG
R.C.E. NO.14584 DATE: 06/05

CHECKED BY: D. HANSEN
R.C.E. NO.12512 DATE: 06/05

IMPROVEMENT PLANS FOR:
ELKHORN RESERVOIR COMMUNICATION DIAGRAM

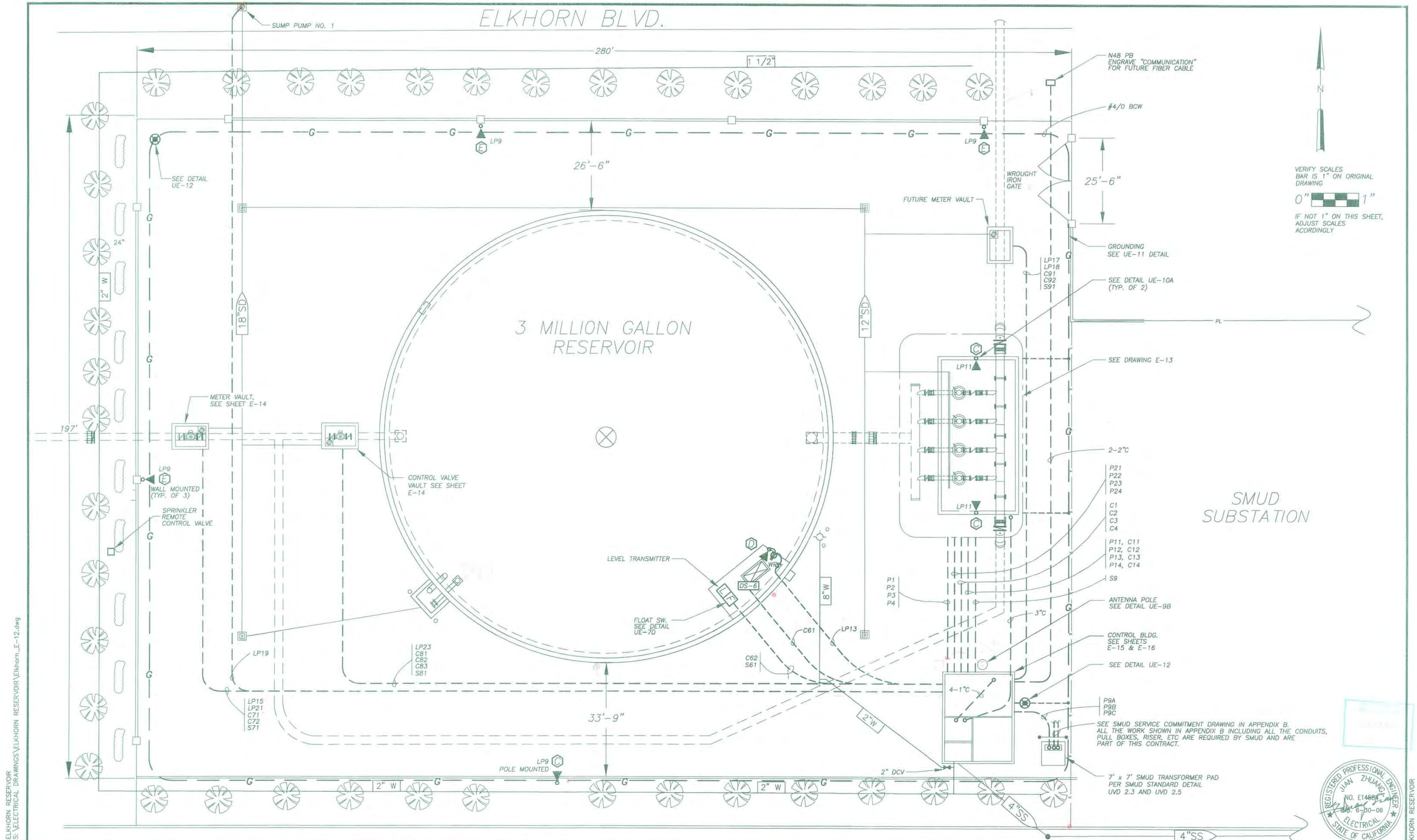
PLANNING NO.	DWG. NO.
PN: ZJ36	E-11
DRAWING NO.	SHEET
	45
GIS GRID NO.	OF
	54





ELKHORN RESERVOIR



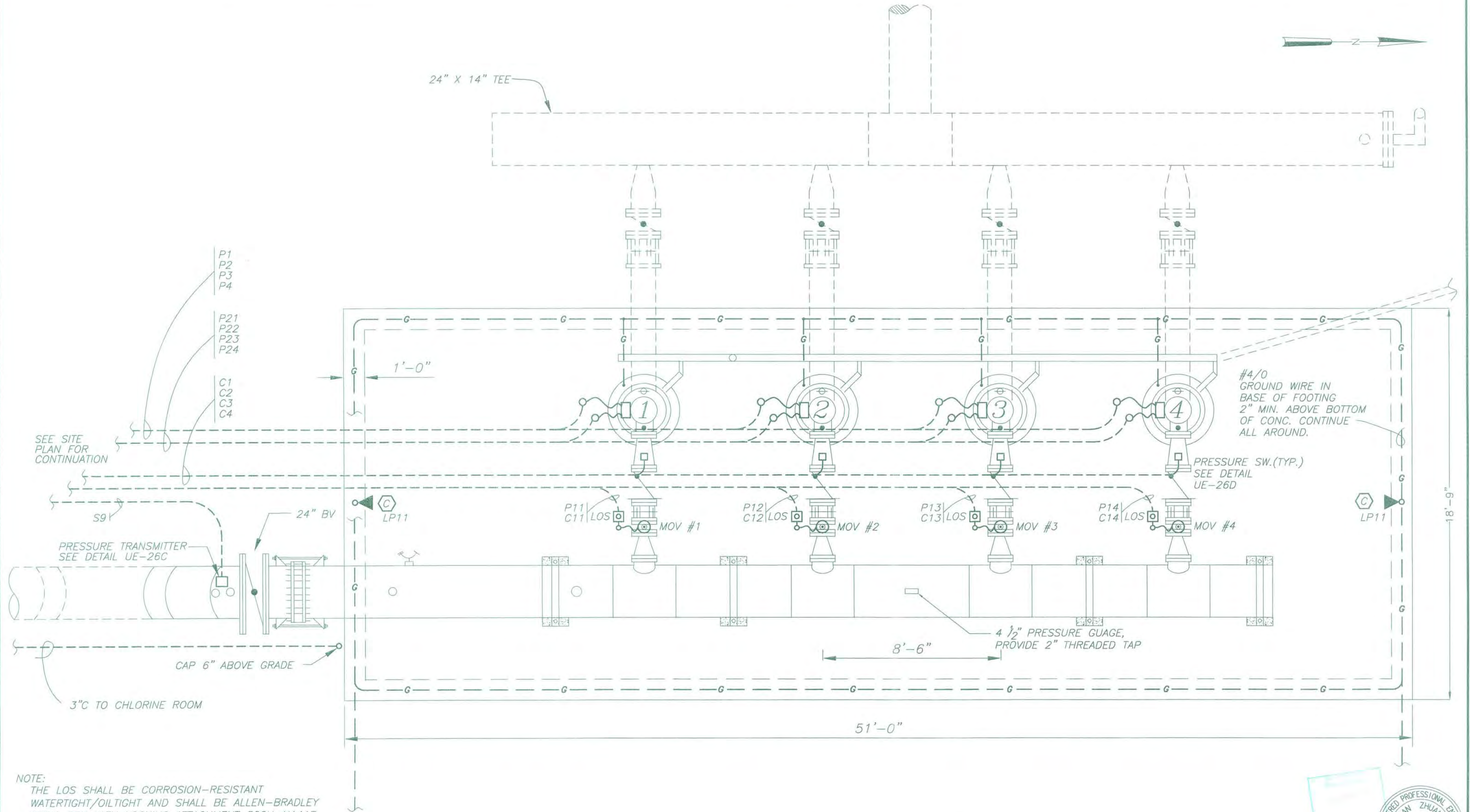
ELKHORN RESERVOIR  
S:\ELECTRICAL DRAWINGS\ELKHORN RESERVOIR\E-12.dwg



PN: ZJ36	REVISIONS				BENCH MARK DESCRIPTION: _____ ELEV. _____	FIELD BOOK SCALE: _____ ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"			CITY OF SACRAMENTO DEPARTMENT OF UTILITIES			IMPROVEMENT PLANS FOR: ELKHORN RESERVOIR ELECTRICAL SITE PLAN			PLANNING NO. PN: ZJ36 DRAWING NO. GIS GRID NO.	DWC. NO. E-12 SHEET 46 OF 54
	NO.	DESCRIPTION	DATE	BY												
DRAWN BY: Q. NHAM DATE: 06/05				DESIGNED BY: J. ZHUANG R.C.E. NO.14584 DATE: 06/05				CHECKED BY: D. HANSEN R.C.E. NO.12512 DATE: 06/05								

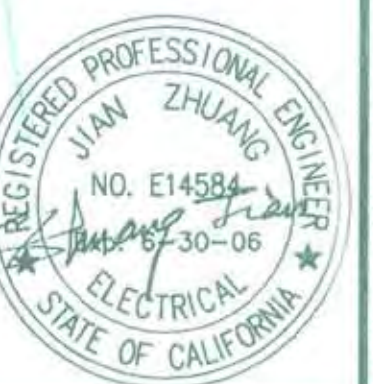


ELKHORN RESERVOIR  
S:\ELECTRICAL DRAWINGS\ELKHORN RESERVOIR\Elkhorn\_E-13.dwg



NOTE:  
THE LOS SHALL BE CORROSION-RESISTANT  
WATERTIGHT/OILTIGHT AND SHALL BE ALLEN-BRADLEY  
800H-R2H WITH LOCKING ATTACHMENT 800H-N141R  
OR ENGINEER APPROVED EQUAL.

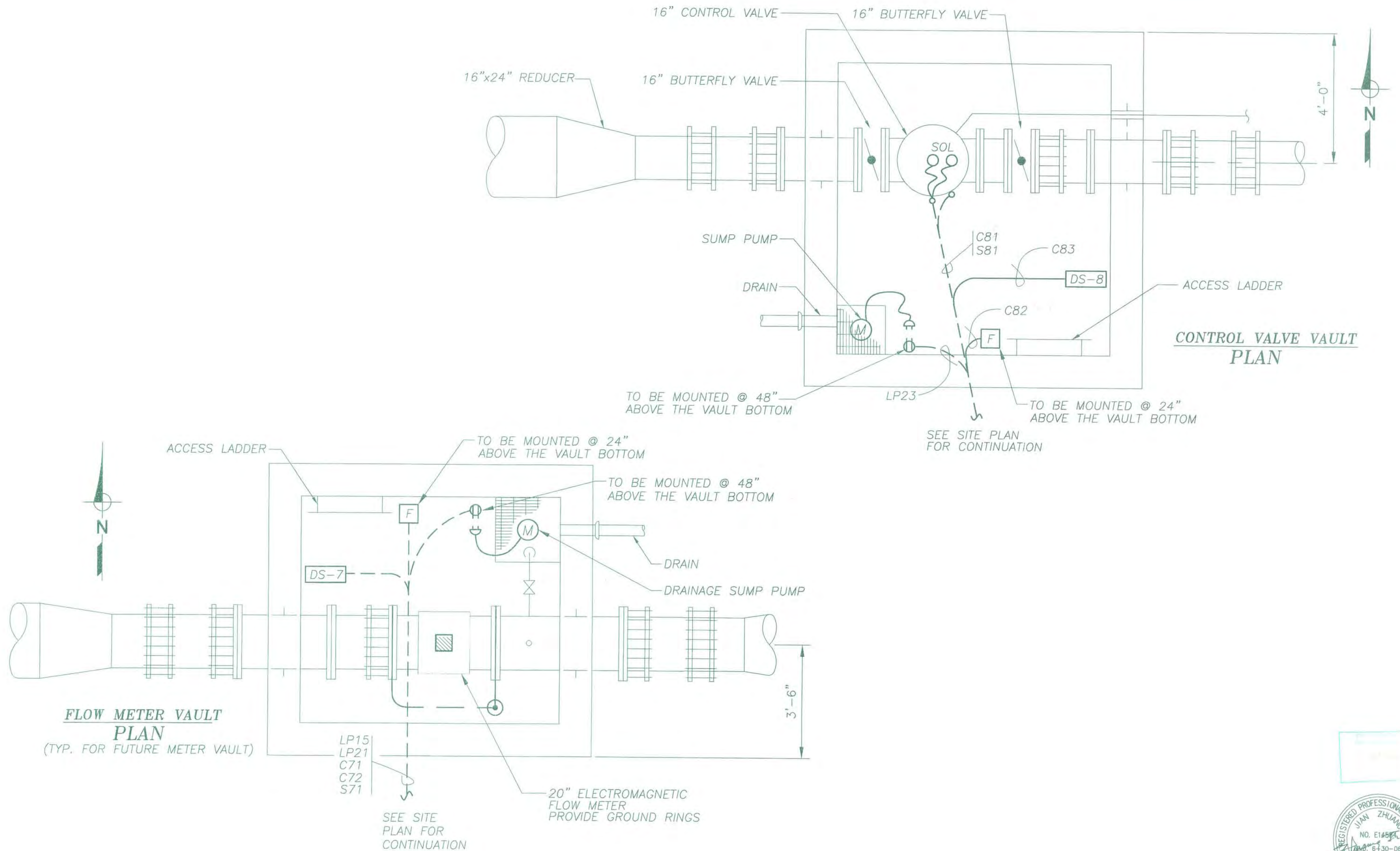
## PLAN - BOOSTER WATER PUMP STATION



PN: ZJ36	REVISIONS				BENCH MARK DESCRIPTION: _____ ELEV. _____	FIELD BOOK SCALE: _____ ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"	 <b>CITY OF SACRAMENTO</b> DEPARTMENT OF UTILITIES	IMPROVEMENT PLANS FOR:				PLANNING NO.	DWS. NO.
	NO.	DESCRIPTION	DATE	BY				ELKHORN RESERVOIR				PN: ZJ36	E-13
								PUMP STATION ELECTRICAL SITE PLAN				DRAWING NO.	47
												GIS GRID NO.	OF
													54



ELKHORN RESERVOIR  
S:\ELECTRICAL DRAWINGS\ELKHORN RESERVOIR\Elkhorn\_E-14.dwg



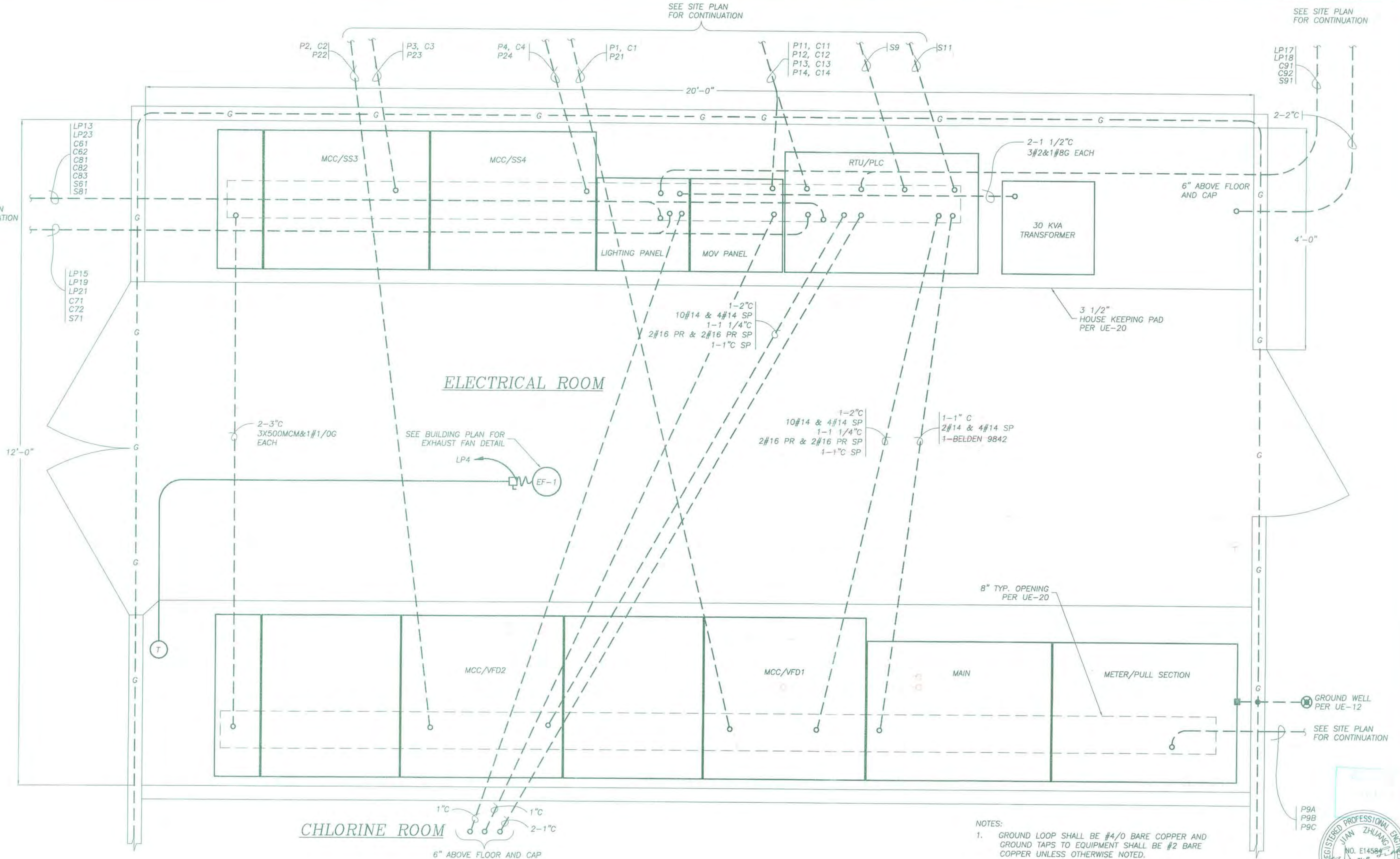
PN: ZJ36	REVISIONS				BENCH MARK DESCRIPTION: _____ ELEV. _____	FIELD BOOK SCALE: _____ ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1" = _____		CITY OF SACRAMENTO DEPARTMENT OF UTILITIES			IMPROVEMENT PLANS FOR: ELKHORN RESERVOIR CONTROL VALVE VAULT AND FLOW METER VAULT		PLANNING NO. _____	DWG. NO. _____
	NO.	DESCRIPTION	DATE	BY				PN: ZJ36	SHEET 48					
								DRAWING NO. _____	OF _____					
								GIS GRID NO. _____	54					
								DRAWN BY: Q. NHAM DATE: 06/05	DESIGNED BY: J. ZHUANG R.C.E. NO. 14584 DATE: 06/05	CHECKED BY: D. HANSEN R.C.E. NO. 12512 DATE: 06/05				



ELKHORN RESERVOIR  
SS\ELECTRICAL DRAWINGS\ELKHORN RESERVOIR\Elkhorn\_E-15.dwg

PN: ZJ36

SEE SITE PLAN  
FOR CONTINUATION



- NOTES:
- GROUND LOOP SHALL BE #4/0 BARE COPPER AND GROUND TAPS TO EQUIPMENT SHALL BE #2 BARE COPPER UNLESS OTHERWISE NOTED.
  - CONDUIT SIZES NOT IDENTIFIED SHALL BE 3/4" C MINIMUM WITH 2#12&1#12G.



REVISIONS

NO.	DESCRIPTION	DATE	BY

BENCH MARK

DESCRIPTION	ELEV.

FIELD BOOK

SCALE:
H: N/A
V: N/A

ON ORIGINAL SCALE  
DRAWING ADJUST  
SCALED DIMENSIONS  
IF THIS DOES NOT  
SCALE AT 1"



CITY OF SACRAMENTO  
DEPARTMENT OF UTILITIES

DRAWN BY: Q. NHAM DATE: 06/05	DESIGNED BY: J. ZHUANG R.C.E. NO.14584 DATE: 06/05	CHECKED BY: D. HANSEN R.C.E. NO.12512 DATE: 06/05
----------------------------------	---	--

IMPROVEMENT PLANS FOR:  
ELKHORN RESERVOIR  
CONTROL BUILDING ELECTRICAL PLAN

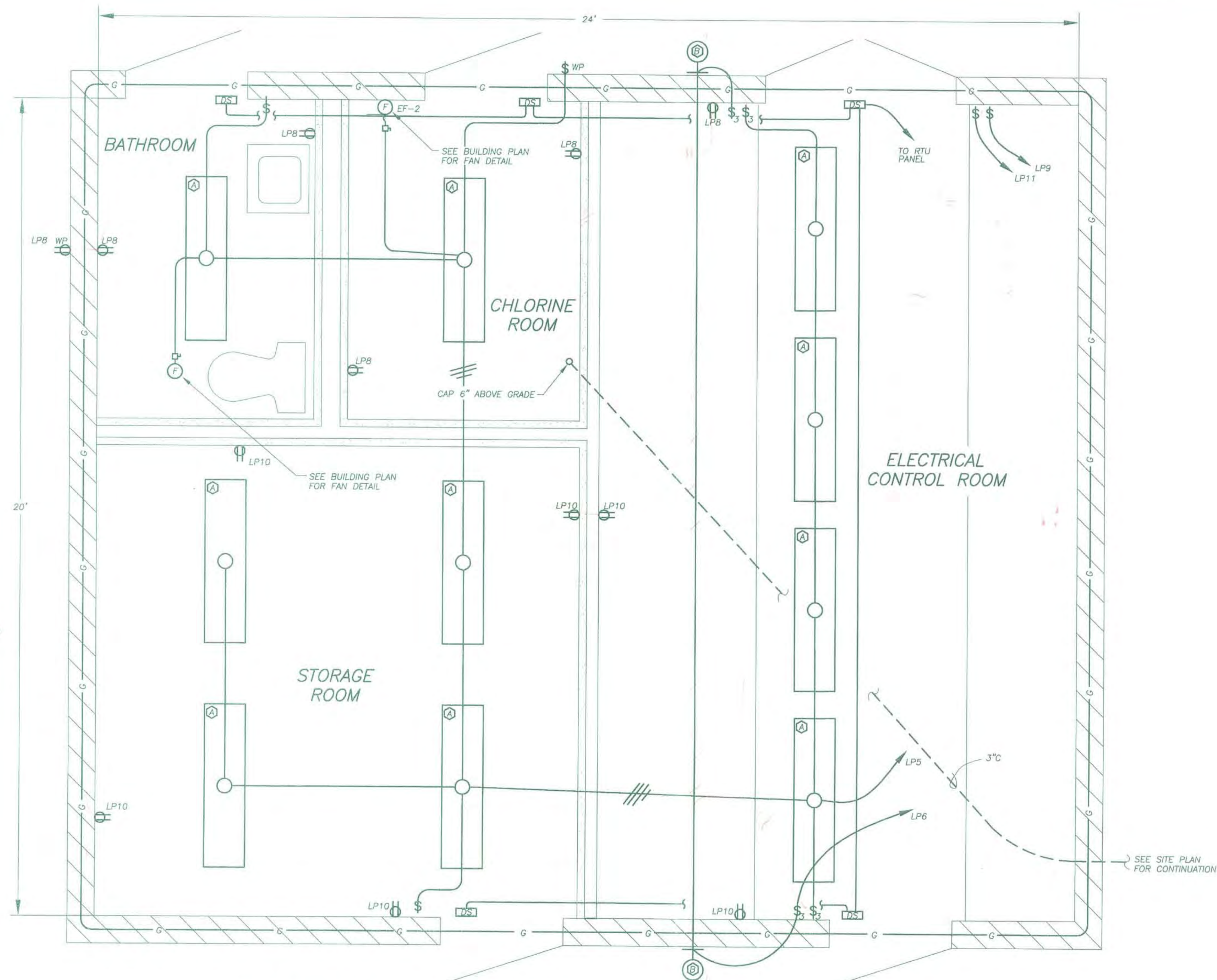
PLANNING NO.	DWG. NO.
PN: ZJ36	E-15
DRAWING NO.	SHEET
	49
GIS GRID NO.	OF
	54





NOTES:

- 1. GROUND LOOP SHALL BE #4/0 BARE COPPER AND GROUND TAPS TO EQUIPMENT SHALL BE #2 BARE COPPER UNLESS OTHERWISE NOTED.
- 2. CONDUIT SIZES NOT IDENTIFIED SHALL BE 3/4" C MINIMUM WITH 2#12&1#12G.



CONTROL BUILDING LIGHTING PLAN



PN: ZJ36	REVISIONS			BENCH MARK DESCRIPTION:	ELEV.	FIELD BOOK	SCALE: H: N/A V: N/A ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"		CITY OF SACRAMENTO DEPARTMENT OF UTILITIES			IMPROVEMENT PLANS FOR: ELKHORN RESERVOIR CONTROL BUILDING LIGHTING PLAN			PLANNING NO.	DWG. NO.
	NO.	DESCRIPTION	DATE						BY	PN: ZJ36	E-16					
										DRAWING NO.	SHEET					
										OF						
										GIS GRID NO.	54					

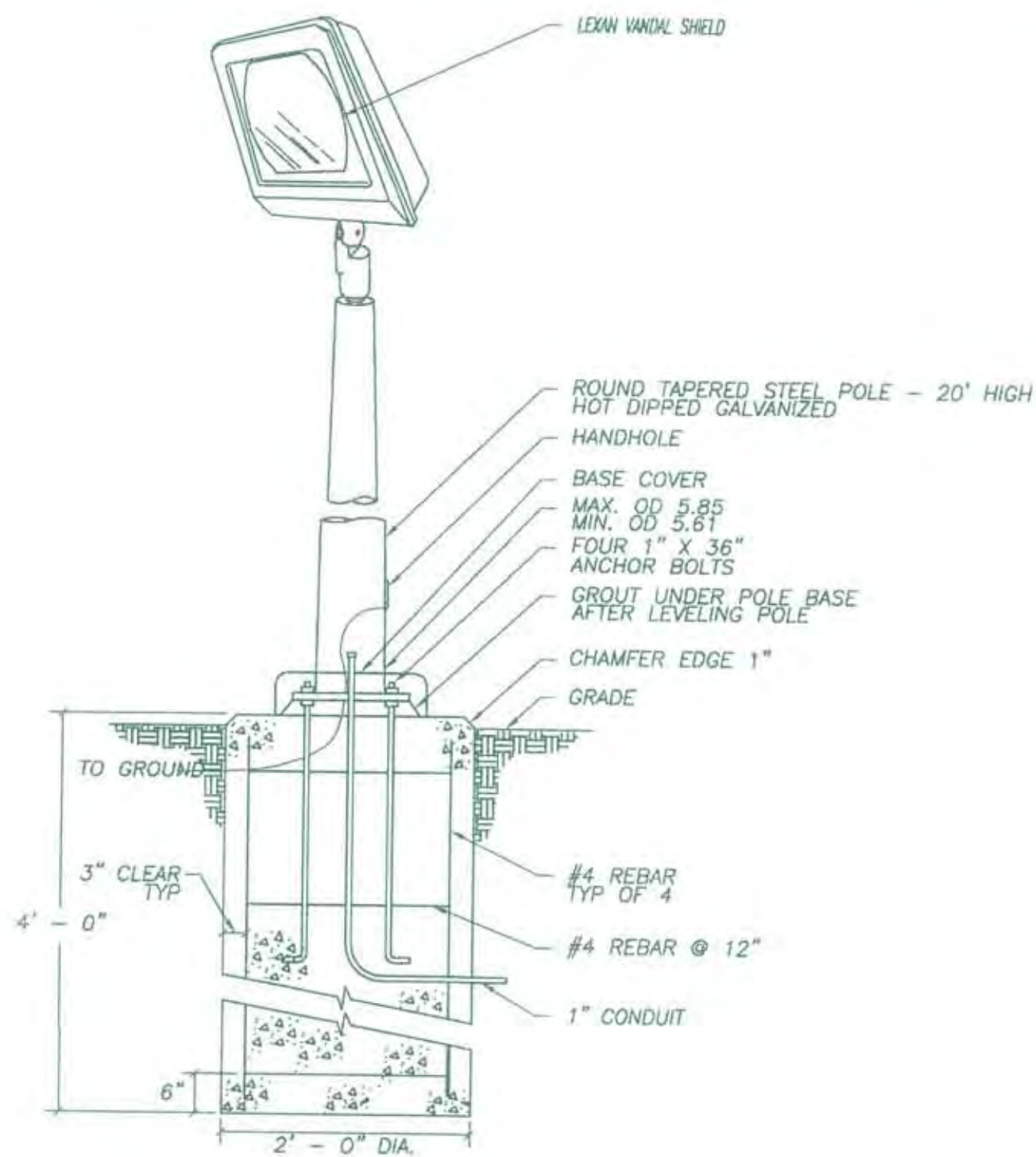
DRAWN BY: Q. NHAM	DESIGNED BY: J. ZHUANG	CHECKED BY: D. HANSEN
DATE: 06/05	R.C.E. NO.14584 DATE: 06/05	R.C.E. NO.12512 DATE: 06/05



CONDUIT AND WIRE SCHEDULE (SCH-1)						
CONDUIT		WIRE	FROM	TO	ROUTE	REMARKS
NO.	SIZE					
P1	3 1/2"	3#500&1#2G	MCC	PUMP #1		
P2	3 1/2"	3#500&1#2G	MCC	PUMP #2		
P3	3 1/2"	3#500&1#2G	MCC	PUMP #3		
P4	3 1/2"	3#500&1#2G	MCC	PUMP #4		
P9A	3 1/2"	3#500&1#1/0N	SMUD XFMR	SWGR		
P9B	3 1/2"	3#500&1#1/0N	SUMD XFMR	SWGR		
P9C	3 1/2"	3#500&1#1/0N	SUMD XFMR	SWGR		
P11	1"	3#10&1#12G	MCC	VALVE #1		
P12	1"	3#10&1#12G	MCC	VALVE #2		
P13	1"	3#10&1#12G	MCC	VALVE #3		
P14	1"	3#10&1#12G	MCC	VALVE #4		
P21	3/4"	2#12&1#12G	LP-14	PUMP #1		SPACE HEATER
P22	3/4"	2#12&1#12G	LP-14	PUMP #2		SPACE HEATER
P23	3/4"	2#12&1#12G	LP-16	PUMP #3		SPACE HEATER
P24	3/4"	2#12&1#12G	LP-16	PUMP #4		SPACE HEATER
LP9	1"	2#10&1#12G	LIGHTING PANEL	AREA LIGHTING		
LP11	1"	2#10&1#12G	LIGHTING PANEL	PUMP LIGHTING		
LP13	1"	2#12&1#12G	LIGHTING PANEL	RESERVOIR TOP		RESERVOIR TOP LIGHT AND RECEPTACLE
LP15	1"	2#12&1#12G	LIGHTING PANEL	FLOW METER		
LP17	1"	2#12&1#12G	LIGHTING PANEL	(F) FLOW METER		
LP18	3/4"	2#12&1#12G	LIGHTING PANEL	(F) METER VAULT		SUMP PUMP NO.4 RECEPTACLE
LP19	3/4"	2#12&1#12G	LIGHTING PANEL	SUMP PUMP NO.1		
LP21	3/4"	2#12&1#12G	LIGHTING PANEL	METER VAULT		SUMP PUMP NO.2 RECEPTACLE
LP23	3/4"	2#12&1#12G	LIGHTING PANEL	CONTROL VALVE VAULT		SUMP PUMP NO.3 RECEPTACLE
C1	1"	4#14&2#14SP	MCC	PUMP #1		
C2	1"	4#14&2#14SP	MCC	PUMP #2		
C3	1"	4#14&2#14SP	MCC	PUMP #3		
C4	1"	4#14&2#14SP	MCC	PUMP #4		
C11	1 1/2"	14#14&4#14SP	MCC	VALVE #1		
C12	1 1/2"	14#14&4#14SP	MCC	VALVE #2		
C13	1 1/2"	14#14&4#14SP	MCC	VALVE #3		
C14	1 1/2"	14#14&4#14SP	MCC	VALVE #4		

[illegible]





AREA FLOODLIGHT  
INSTALLATION DETAIL

REV: 04/98

UE-10A

LIGHTING PANEL "LP" SCHEDULE (SCH-2)

VOLTS: 120/208  
PHASE: 3  
WIRE: 4

BUS AMPS: 225 A  
MAIN BREAKER: 100 A

FEED:  
MOUNTING: MCC  
AIC RATING: 10,000 A

LOAD DESCRIPTION	LOAD VA	BKR AMPS	BKR NO.	ØA	ØB	ØC	BKR NO.	BKR AMPS	LOAD VA	LOAD DESCRIPTION
SWITCH BOARD & MCC SPACE HEATERS	800	20	1				2	20	800	UPS POWER SUPPLY
SWITCH BOARD & MCC SPACE HEATERS	800	20	3				4	20	100	EXHAUST FAN EF-1
INTERIOR LIGHTING	800	20	5				6	20	-	SPARE
EXTERIOR LIGHTING	140	20	7				8	20	1800	BUILDING RECEPTACLE
AREA LIGHTING	1000	20	9				10	20	1800	BUILDING RECEPTACLE
PUMP LIGHTING	500	20	11				12	20	720	PANEL RECEPTACLE
RESERVOIR TOP	200	20	13				14	20	400	MOTOR #1,2 SPACE HEATER
FLOW METER	200	20	15				16	20	600	MOTOR #3,4 SPACE HEATER
(F) FLOW METER	-	20	17				18	20	300	SUMP PUMP NO.4
SUMP PUMP NO.1	300	20	19				20			
SUMP PUMP NO.2	300	20	21				22	100	-	MAIN
SUMP PUMP NO.3	300	20	23				24			

NEUTRAL  
GROUND

CONDUIT MATERIAL TABLE

CONDUIT INSTALLATION	CONDUIT TYPE
EXPOSED CONDUIT (INDOOR AND OUT DOOR)	RIGID GALVANIZED STEEL CONDUIT
CONDUIT IN CONCRETE SLAB	RIGID GALVANIZED STEEL CONDUIT
UNDERGROUND CONDUIT	RIGID GALVANIZED STEEL PVC COATED CONDUIT WHERE THE CONDUIT DIRECTLY IN CONTACT WITH THE EARTH OR SCHEDULE 40 PVC CONDUIT WITH CONCRETE ENCASEMENT MINIMUM OF 4" ALL AROUND FOR HORIZONTAL RUNS EXCEPT VERTICAL SWEEP AND RISER
CONDUIT IN DUCT BANK	SCHEDULE 40 PVC CONDUIT WITH CONCRETE ENCASEMENT MINIMUM OF 4" ALL AROUND FOR HORIZONTAL RUNS EXCEPT VERTICAL SWEEP AND RISER
VERTICAL OR HORIZONTAL SWEEPS, RISERS, OR STUBS INTO UNDERGROUND BOXES	RIGID GALVANIZED STEEL PVC COATED CONDUIT FOR ENTIRE SWEEP, UNDERGROUND RUNS 5' TO RISER OR STUB, AND 6" ABOVE FINISH GRADE. 6" ABOVE FINISH GRADE SHALL BE COVERED AS EXPOSED CONDUIT
BOTTOM ENTRANCE OF SWITCHGEAR, DISTRIBUTION PANEL, MCC, ETC.	RIGID GALVANIZED STEEL PVC COATED CONDUIT
SIDE OR TOP ENTRANCE OF SWITCHGEAR, DISTRIBUTION PANEL, MCC, ETC.	RIGID GALVANIZED STEEL CONDUIT
CONDUIT EXPOSED TO CORROSIVE ENVIRONMENT (SEWER WET WELL, FOR EXAMPLE)	RIGID GALVANIZED STEEL PVC COATED CONDUIT
PRIMARY AND SECONDARY OF SMUD POWER TRANSFORMER	PER SMUD SERVICE REQUIREMENTS
BOTTOM ENTRANCE FROM SMUD POWER TRANSFORMER TO CITY MAIN SWITCHGEAR	PVC CONDUIT WITH CONCRETE ENCASEMENT MINIMUM OF 4" ALL AROUND
MOTOR CONDUIT BOX TO RIGID WIREWAY SYSTEM	FLEXIBLE LIQUIDTIGHT METAL CONDUIT
EQUIPMENT SUBJECT TO VIBRATION	FLEXIBLE LIQUIDTIGHT METAL CONDUIT

NOTES:

1. ALL ACCEPTABLE CONDUIT MATERIALS ARE SPECIFIED IN SPECIFICATION SECTION 16110 2.02 A
2. ANY CONDUIT NOT COVERED IN THE ABOVE CATEGORIES SHALL BE RIGID GALVANIZED STEEL PVC COATED.
3. ALL UNDERGROUND PVC CONDUITS SHALL BE ENCASED IN RED CONCRETE

LIGHTING FIXTURE SCHEDULE (SCH-3)

REF.	DESCRIPTION	MOUNTING	VOLTS	WATT	LAMP	CATALOG#
A	FLUORESCENT FIXTURE, OPEN STRIP LIGHT, DIE-FORMED, HEAVY GAUGE STEEL BODY, CRYSCOAT TREATED, HIGH REFLECTIVE WHITE EPOXY PAINT FINISH, DAMP LOCATION LISTED	CEILING, SURFACE	120V	2-32W	FLUORESCENT COOL WHITE, T8	LITHONIA MODEL # L232-120-GEB WITH SYMMETRICAL REFLECTOR OR EQUAL
B	HIGH PRESSURE SODIUM, WALL PACK FIXTURE, DIE-CAST ALUMINUM HOUSING, BRONZE PAINT, UL LISTED FOR WET LOCATIONS WITH PHOTO CELL	SIDE OF BUILDING	120V	70W	HIGH PRESSURE SODIUM	GE MODEL # WL07S1PE OR EQUAL
C	HIGH PRESSURE SODIUM, DRIVE WAY LIGHTING, DIE-CAST SINGLE-PIECE ALUMINUM, INTEGRAL ARM	LIGHTING POLE	120V	150W	HIGH PRESSURE SODIUM	LITHONIA MODEL # AS1-150S-SR2-MVOLT-SPA-DSAS1-PE1-AS1VG
D	8" SQUARE BOLLARD AREA LIGHT	RESERVOIR TOP	120V	150W	INCANDESCENT	LITHONIA MODEL # KBS8-150I-R5-120-CR-FG WITH MOUNTING HARDWARE
E	OUTDOOR WALL MOUNTED LIGHTING, METAL HALIDE	WALL MOUNTED	120V	175W	METAL HALIDE	LITHONIA MODEL # WSR-175M-MD-120-PE-WSBBW-WSRVG-DBBT

REVISIONS

NO.	DESCRIPTION	DATE	BY
1			
2			
3			
4			

BENCH MARK  
DESCRIPTION:

ELEV. \_\_\_\_\_

FIELD BOOK

SCALE:

H: N/A

V: N/A

ON ORIGINAL SCALE  
DRAWING ADJUST  
SCALED DIMENSIONS  
IF THIS DOES NOT  
SCALE AT 1"



CITY OF SACRAMENTO  
DEPARTMENT OF UTILITIES

DRAWN BY: Q. NHAM  
DATE: 06/05

DESIGNED BY: J. ZHUANG  
R.C.E. NO.14584 DATE: 06/05

CHECKED BY: D. HANSEN  
R.C.E. NO.12512 DATE: 06/05

IMPROVEMENT PLANS FOR:

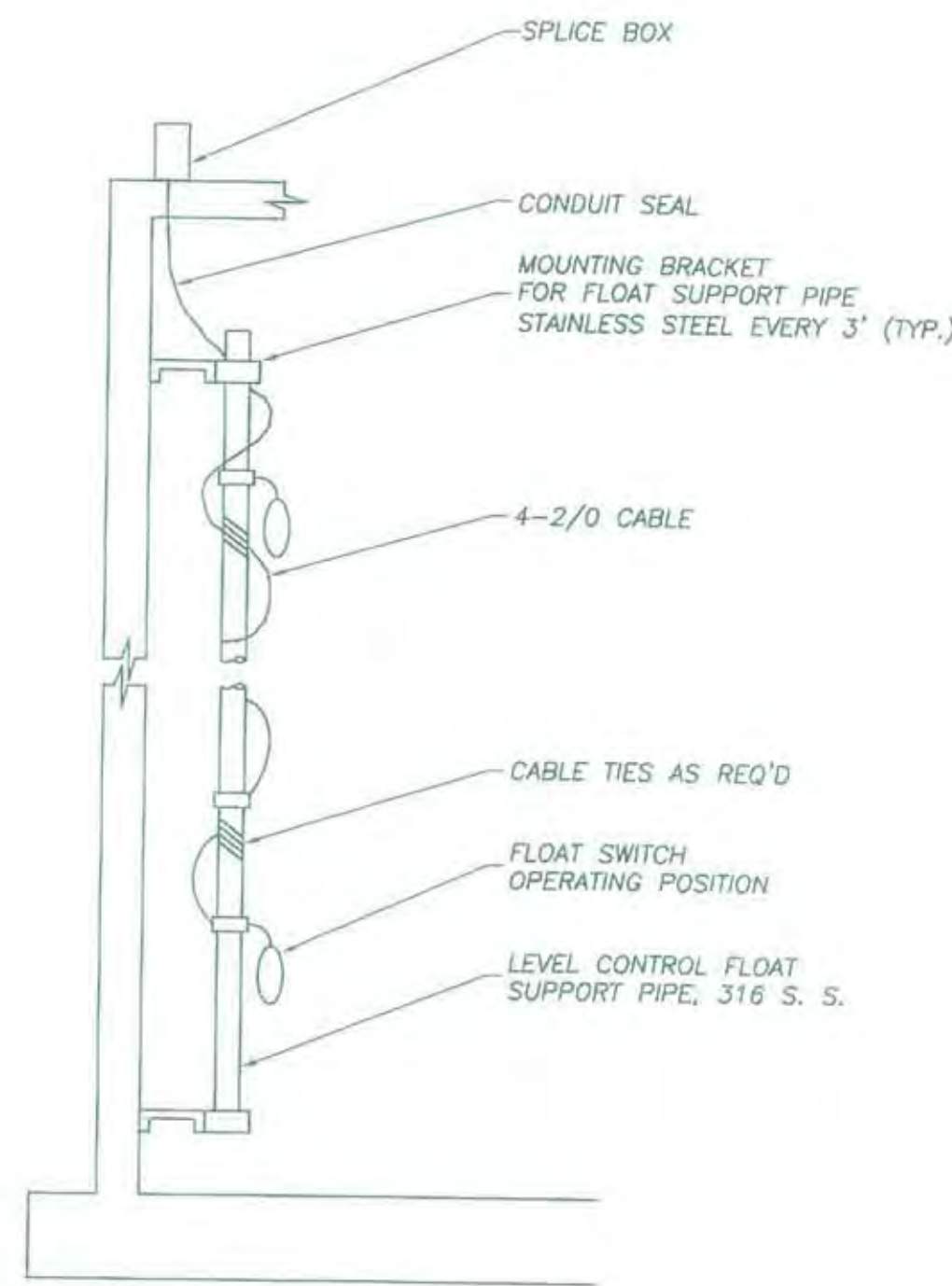
ELKHORN RESERVOIR  
LIGHTING PANEL AND FIXTURE SCHEDULES

PLANNING NO. \_\_\_\_\_  
PN: ZJ36  
DRAWING NO. \_\_\_\_\_  
GIS GRID NO. \_\_\_\_\_

DWG. NO. E-18  
SHEET 52  
OF 54



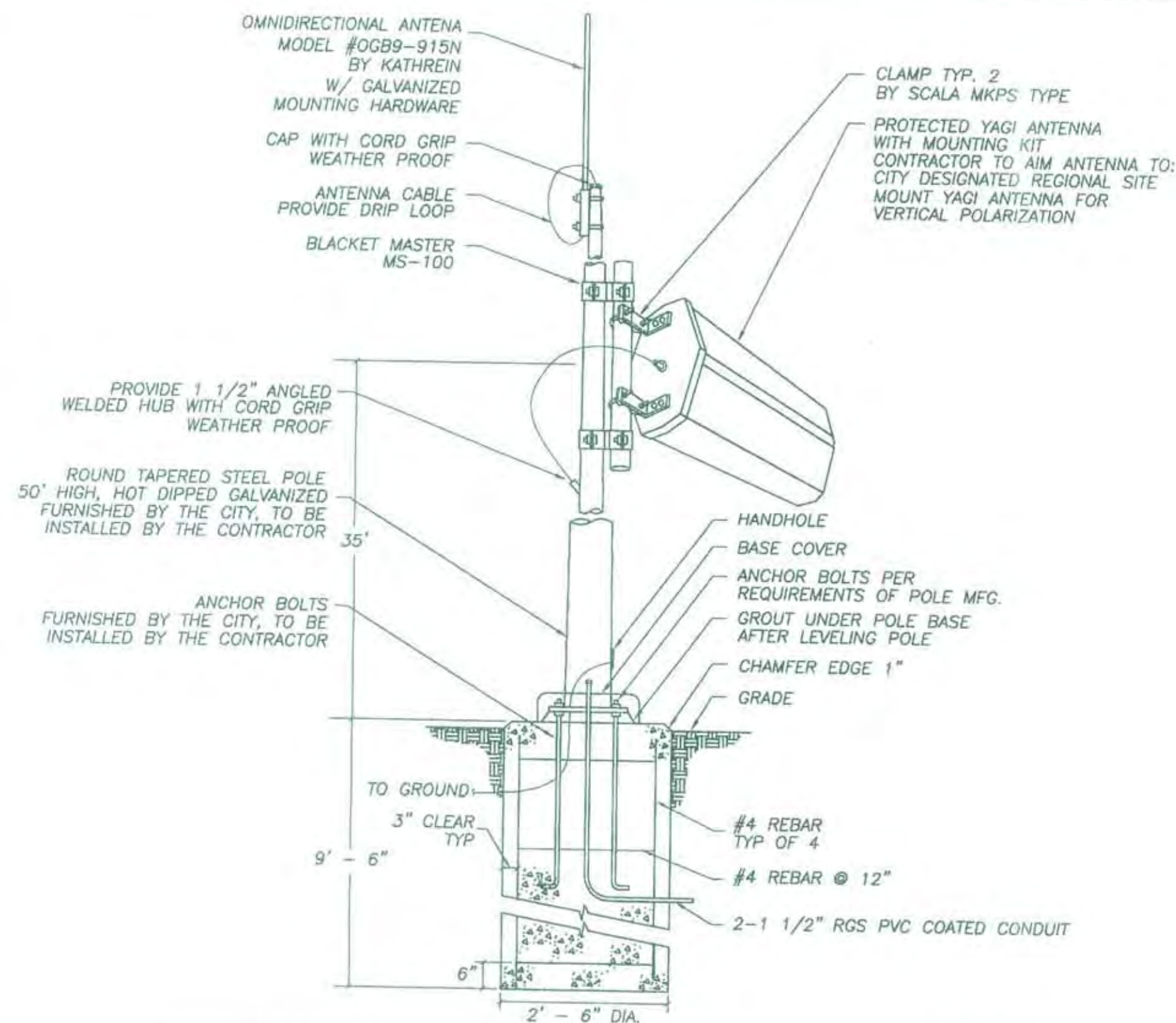




FLOAT SWITCH  
INSTALLATION DETAIL

REV: 02/01

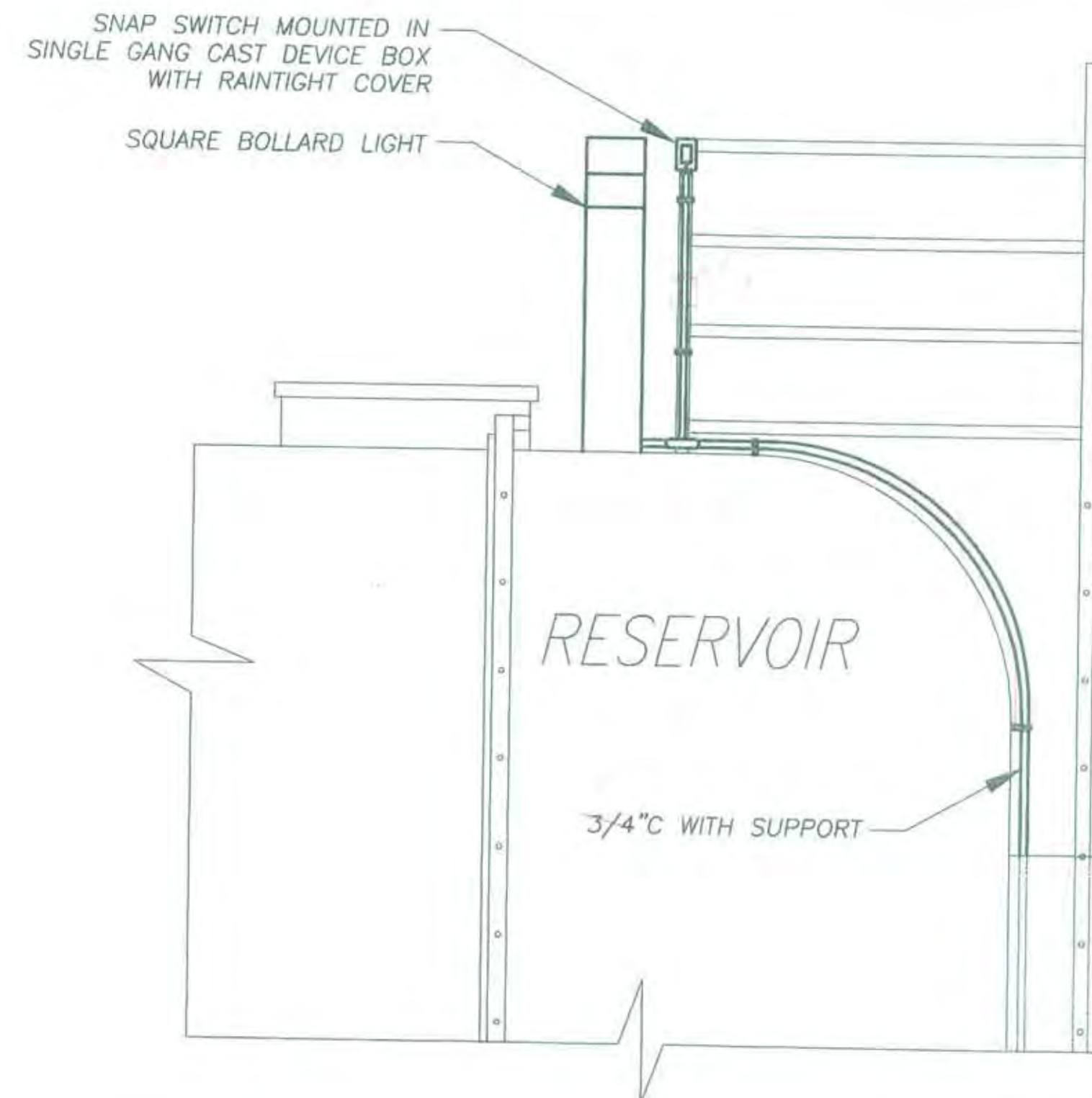
UE-7D



REGIONAL SITE ANTENNA POLE  
INSTALLATION DETAIL

REV: 07/01

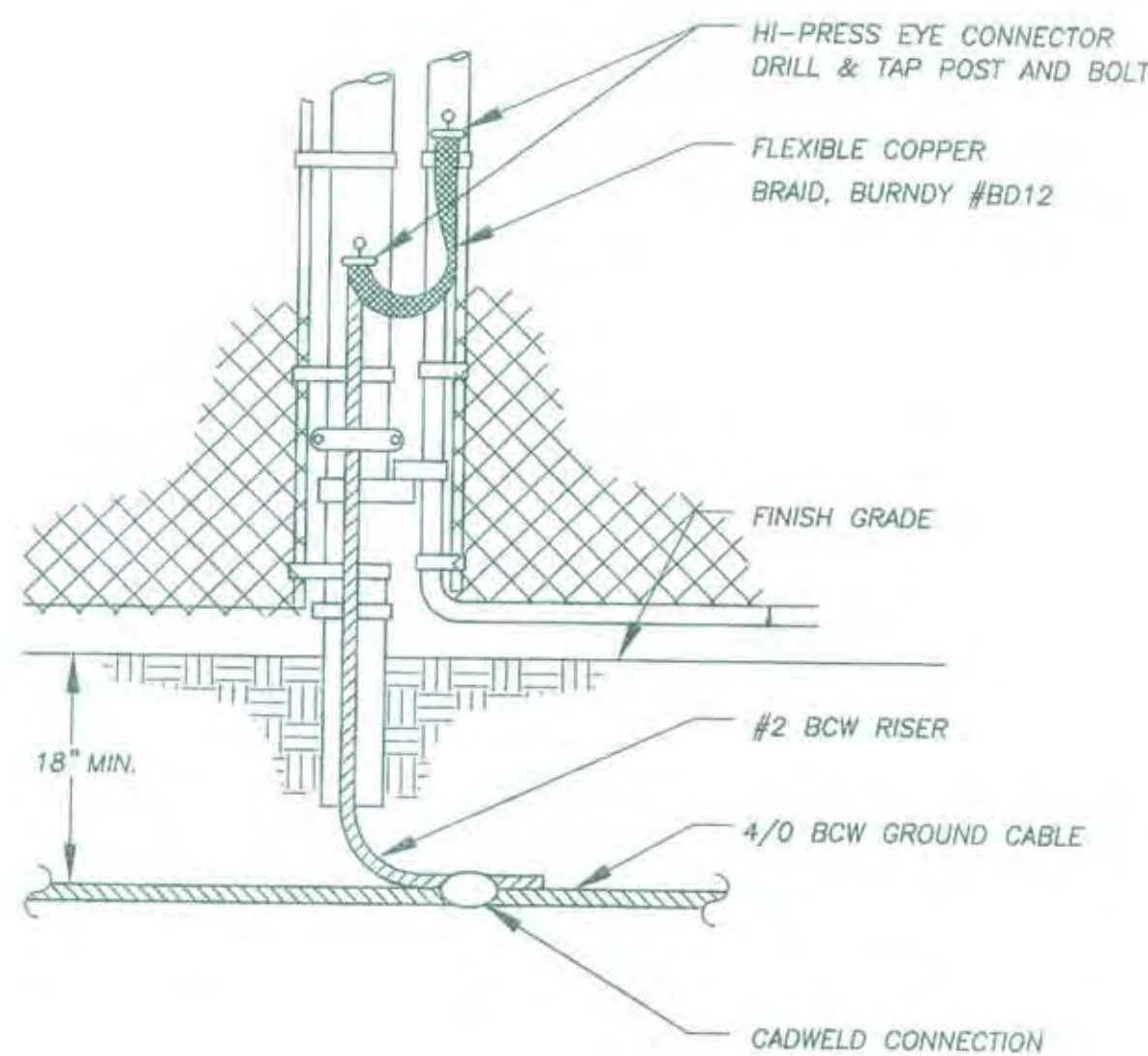
UE-9B



SITE LIGHTING  
INSTALLATION DETAIL

05/01

UE-10C



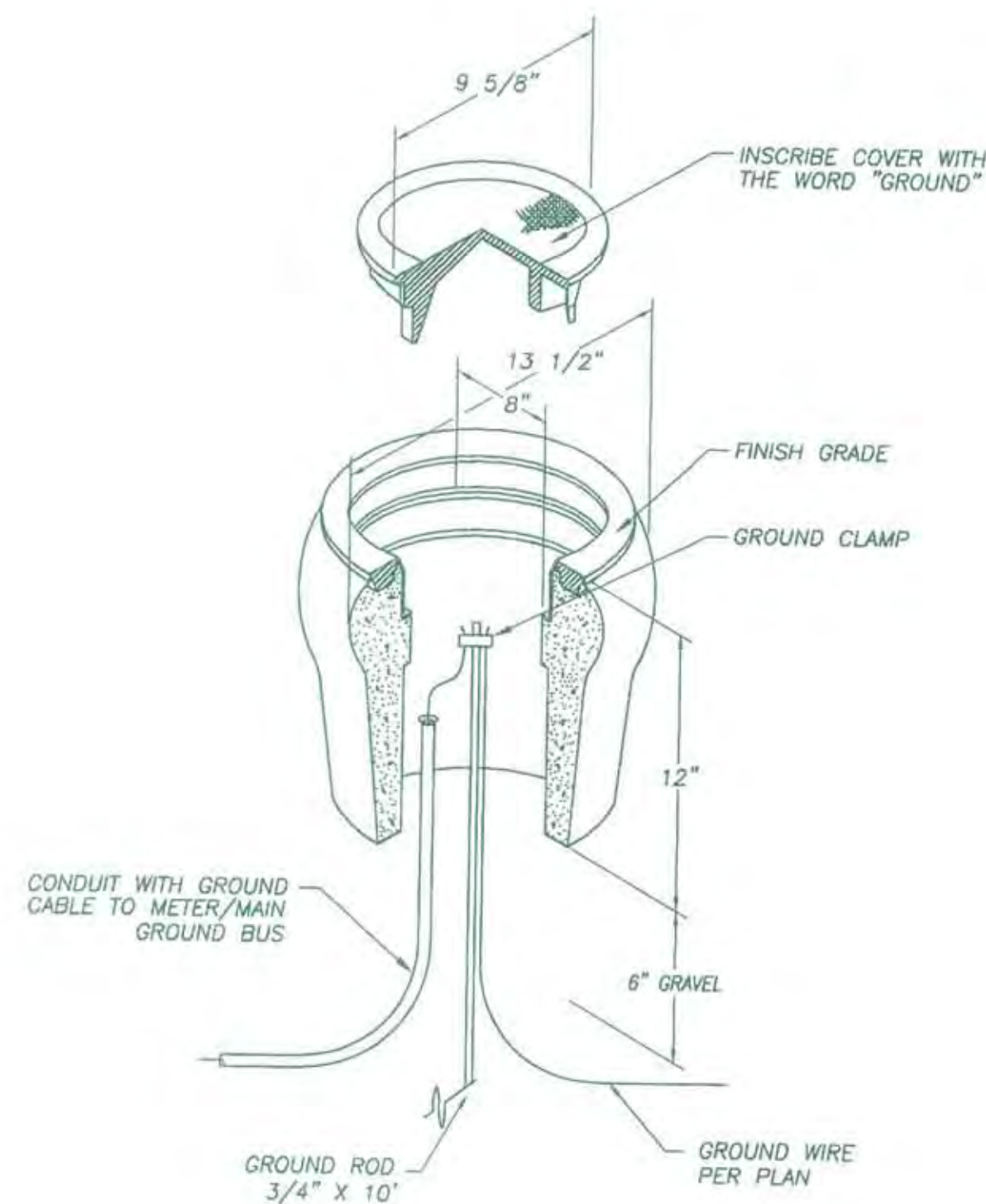
NOTE:

GROUND EVERY OTHER FENCE POST, ALL CORNER POSTS AND GATES

FENCE AND GATE GROUNDING  
INSTALLATION DETAIL

REV: 05/99

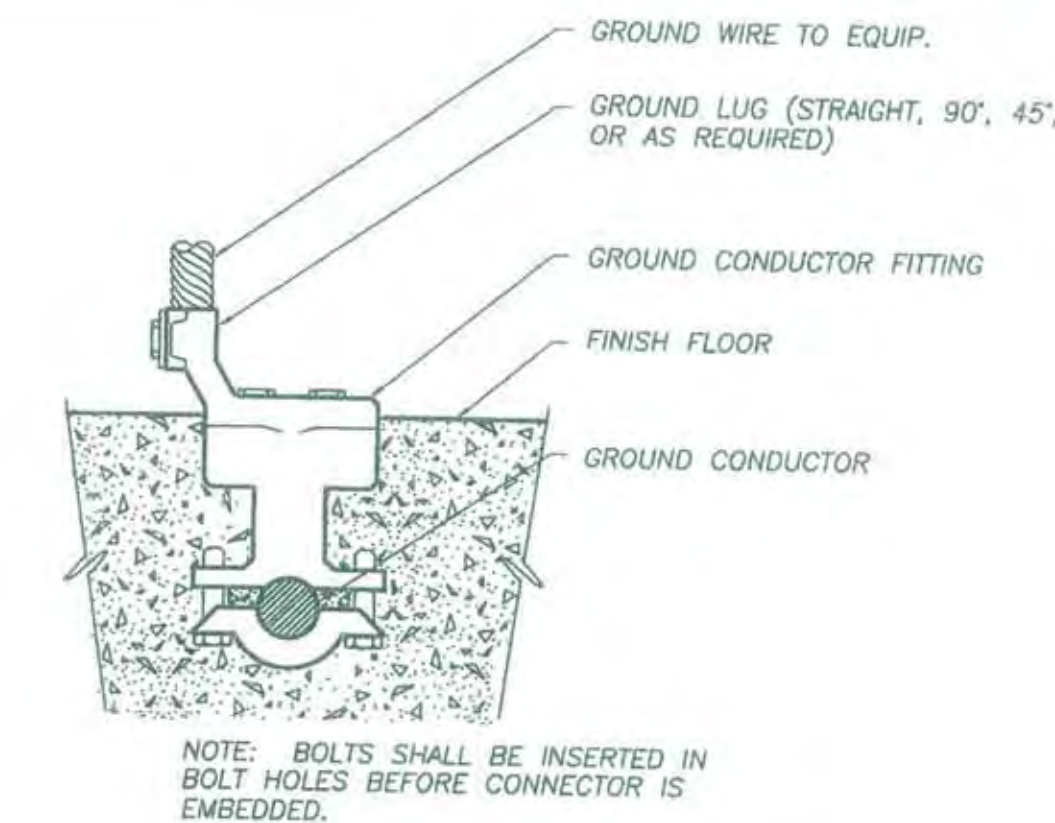
UE-11



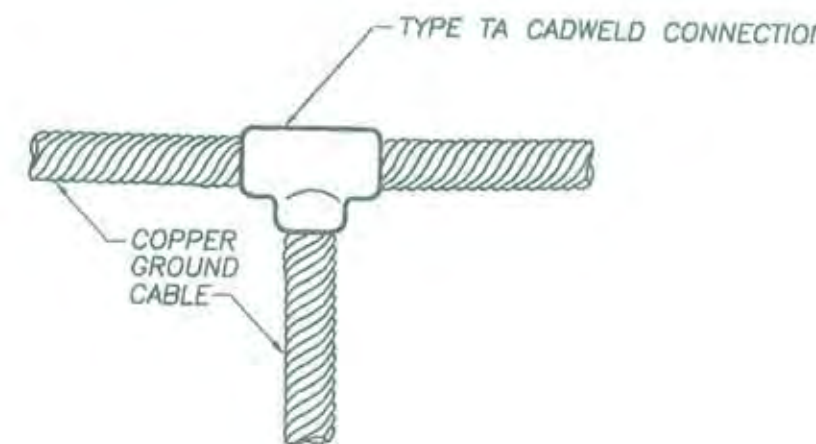
GROUND WELL  
INSTALLATION DETAIL

REV: 07/97

UE-12



GROUNDING INSERT



GROUND CABLE CONNECTION

GROUNDING INSERT AND  
GROUND CABLE CONNECTION

REV: 06/97

UE-13

ELKHORN RESERVOIR  
S:\ELECTRICAL DRAWINGS\ELKHORN RESERVOIR\Elkhorn\_06-1.dwg

PN: ZJ36

NO.	DESCRIPTION	DATE	BY
1			
2			
3			
4			

BENCH MARK DESCRIPTION:	ELEV. _____

FIELD BOOK	SCALE: _____
	ON ORIGINAL SCALE
	DRAWING ADJUST
	SCALED DIMENSIONS
	IF THIS DOES NOT
	SCALE AT 1"



CITY OF SACRAMENTO  
DEPARTMENT OF UTILITIES

DRAWN BY: Q. NHAM	DESIGNED BY: J. ZHUANG	CHECKED BY: D. HANSEN
DATE: 06/05	R.C.E. NO. 14584 DATE: 06/05	R.C.E. NO. 12512 DATE: 06/05

IMPROVEMENT PLANS FOR:  
ELKHORN RESERVOIR  
INSTALLATION DETAILS

PLANNING NO.	DWG. NO.
PN: ZJ36	GE-1
DRAWING NO.	SHEET
	53
GIS GRID NO.	OF
	54





UE-14

UE-17B

UE-20

UE-22

—LIE-260


LIF-26D

PN: ZJ36

REVISIONS			
NO.	DESCRIPTION	DATE	BY
△			
△			
△			
△			
△			

BENCH MARK	ELEV. _____
DESCRIPTION:	

FIELD BOOK	1"
SCALE:	ON ORIGINAL SCALE
H: N/A	DRAWING ADJUST
V: N/A	SCALED DIMENSIONS
	IF THIS DOES NOT
	SCALE AT 1"


 <h1 style="text-align: center;">CITY OF SACRAMENTO</h1> <h2 style="text-align: center;">DEPARTMENT OF UTILITIES</h2>		
DRAWN BY: <u>Q. NHAM</u> DATE: <u>06/05</u>	DESIGNED BY: <u>J. ZHUANG</u> R.C.E. NO. <u>14584</u> DATE: <u>06/05</u>	CHECKED BY: <u>D. HANSEN</u> R.C.E. NO. <u>12512</u> DATE: <u>06/05</u>

IMPROVEMENT PLANS FOR:  
**ELKHORN RESERVOIR**  
**INSTALLATION DETAILS**

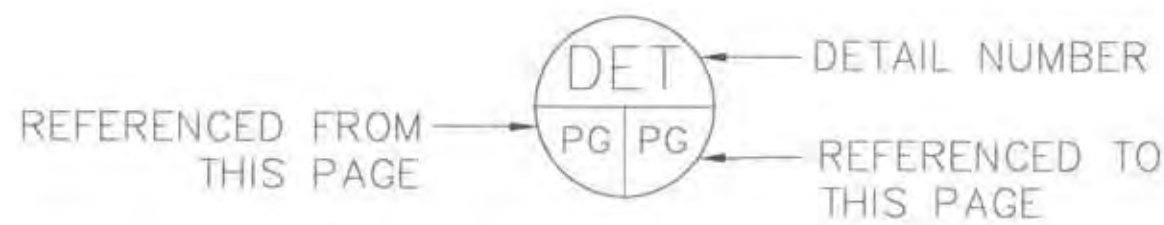
PLANNING NO.	DWG. NO. GE-2
PN: ZJ36	SHEET 54
DRAWING NO.	OF
GIS GRID NO.	54

ELKHORN RESERVOIR



- 1  (S-1)—DRAWING INDEX, GENERAL NOTES  
(S-2)—MAT SLAB SECTIONS  
(S-3)—TANK PLANS AND SECTION  
(S-4)—TYPICAL WALL SECTION AND DETAILS  
(S-5)—PRESTRESSING NOTES AND MISCELLANEOUS DETAILS  
(S-6)—ROOF REINFORCEMENT PLANS AND DETAILS  
(S-7)—MAT SLAB, COLUMN AND DOWNSPOUT DETAILS  
(S-8)—PIPE ENTRANCE DETAILS  
(S-9)—INTERIOR LADDER AND HATCH DETAILS  
(S-10)—EXTERIOR LADDER AND ROOF VENT DETAILS  
(S-11)—HANDRAIL DETAILS

DRAWING INDEX



DETAIL LEGEND

REINFORCING BAR LAP SPLICE TABLE (IN.)		
BAR SIZE	TOP BARS	OTHER BARS
#3	20	16
#4	20	16
#5	24	19
#6	29	22
#7	42	33
#8	48	37
#9	54	42
#10	61	47
#11	68	52


NOTE: "TOP BARS" APPLIES TO HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE SPLICE.

- |                       |                              |
|-----------------------|------------------------------|
| ? — CENTERLINE        | LP — LOW POINT               |
| Ø — DIAMETER          | MAX — MAXIMUM                |
| @ — AT                | MIN — MINIMUM                |
| CLR — CLEAR           | OC — ON CENTER               |
| CONT — CONTINUOUS     | SCH — SCHEDULE               |
| DI — DUCTILE IRON     | SST — STAINLESS STEEL        |
| DWG — DRAWING         | SYM — SYMMETRICAL            |
| EF — EACH FACE        | TOF — TOP OF FLOOR           |
| EW — EACH WAY         | TOW — TOP OF WALL            |
| EL — ELEVATION        | TYP — TYPICAL                |
| FF — FINISHED FLOOR   | UNO — UNLESS NOTED OTHERWISE |
| FG — FINISHED GRADE   |                              |
| HP — HIGH POINT       |                              |
| IE — INVERT ELEVATION |                              |

ABBREVIATION LEGEND

GENERAL NOTES:

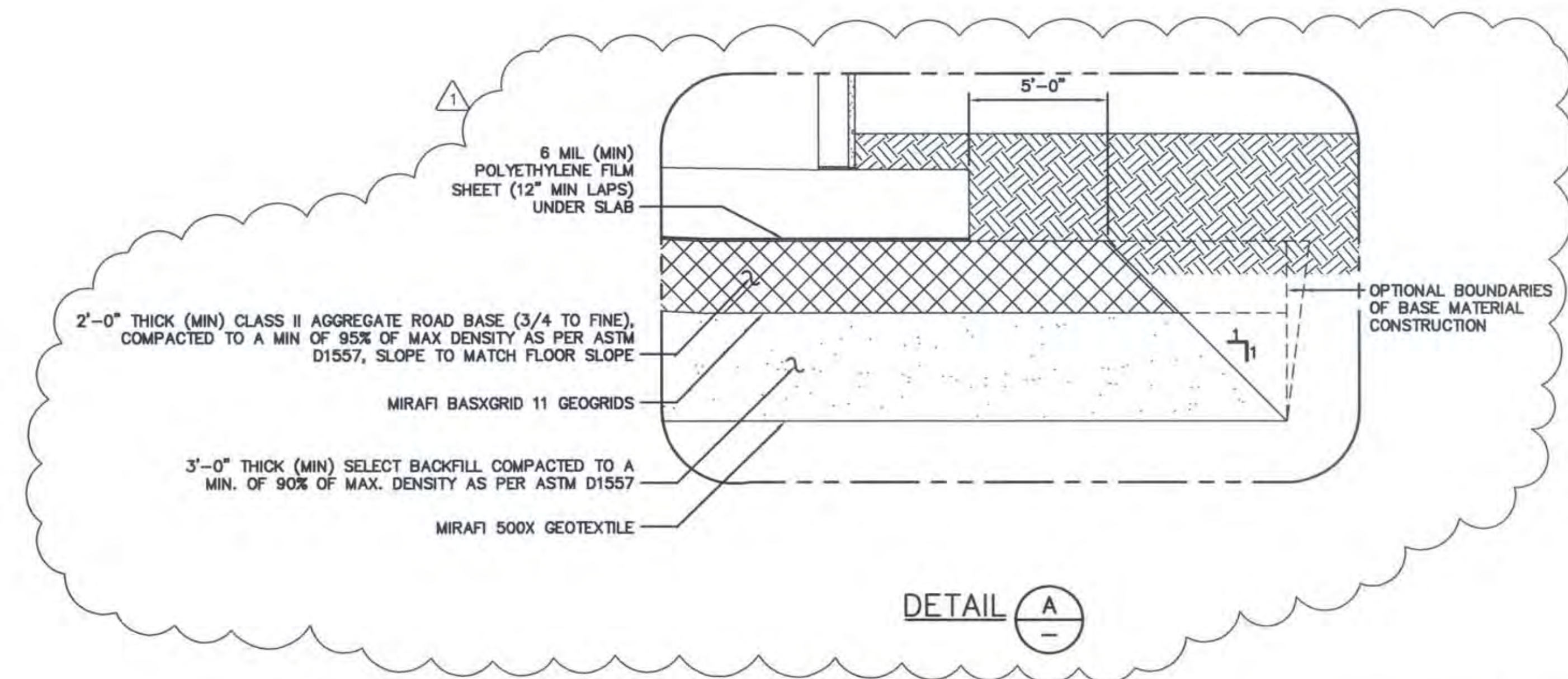
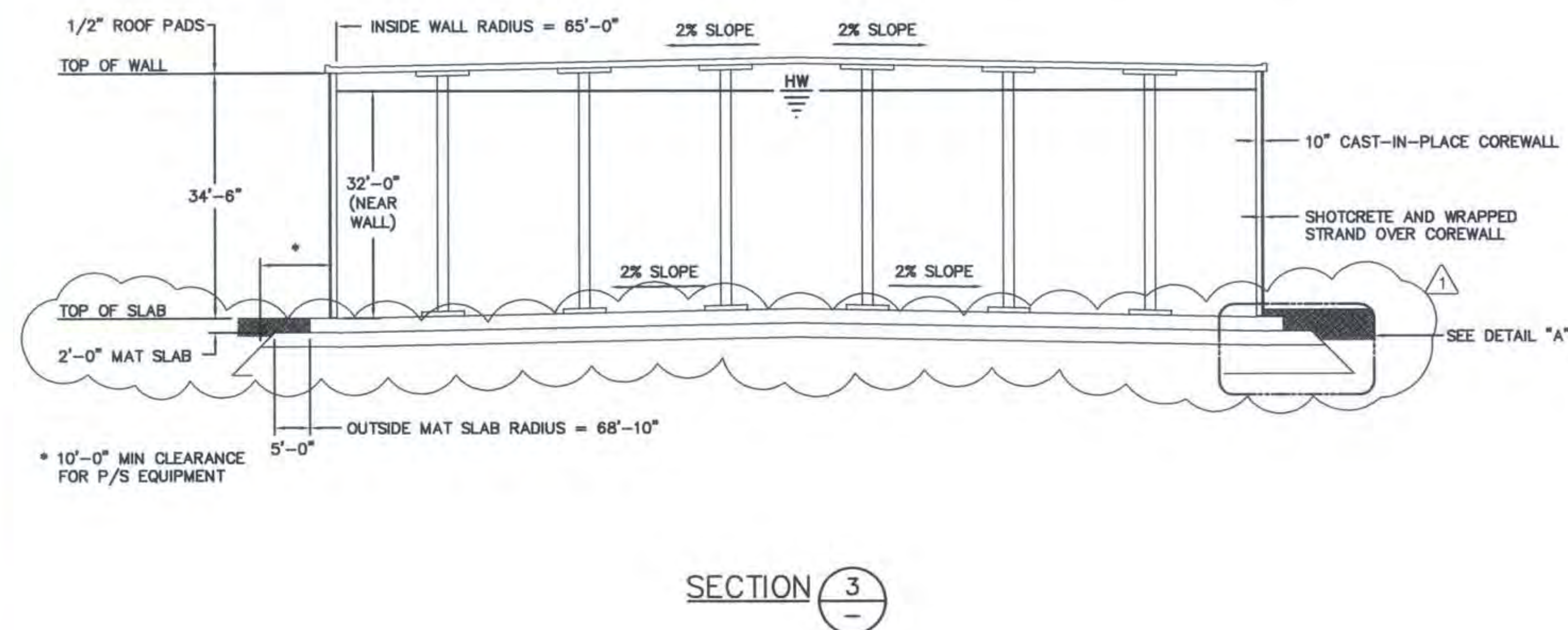
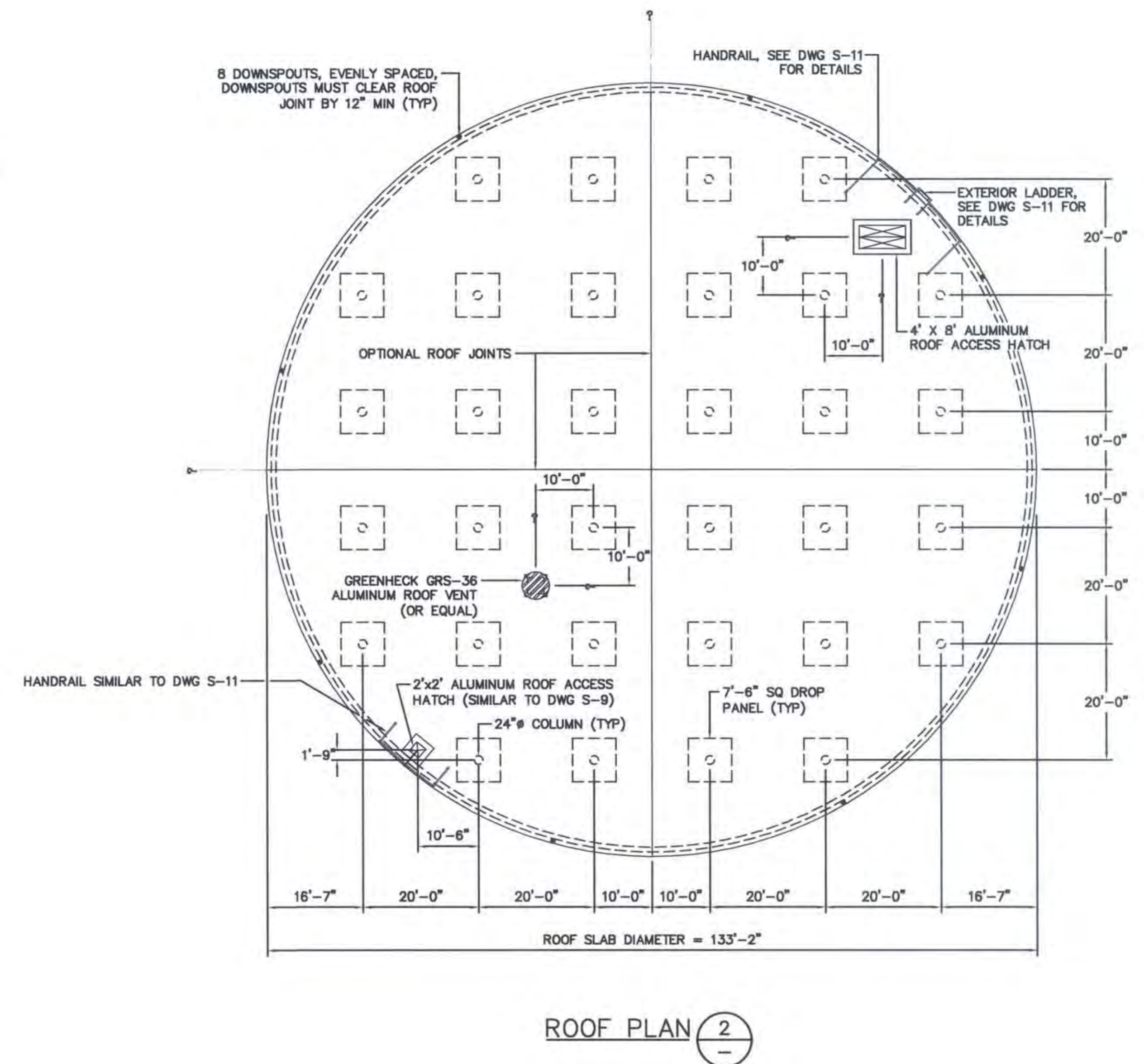
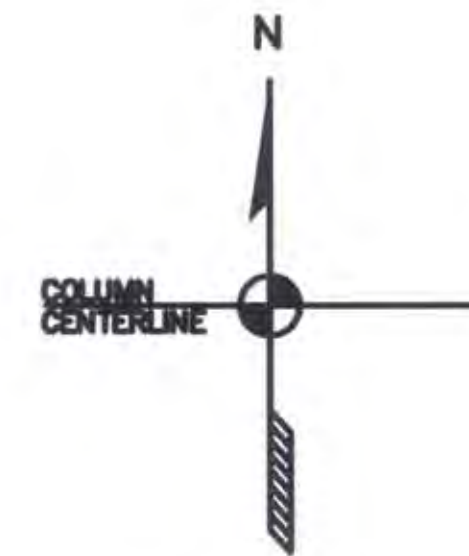
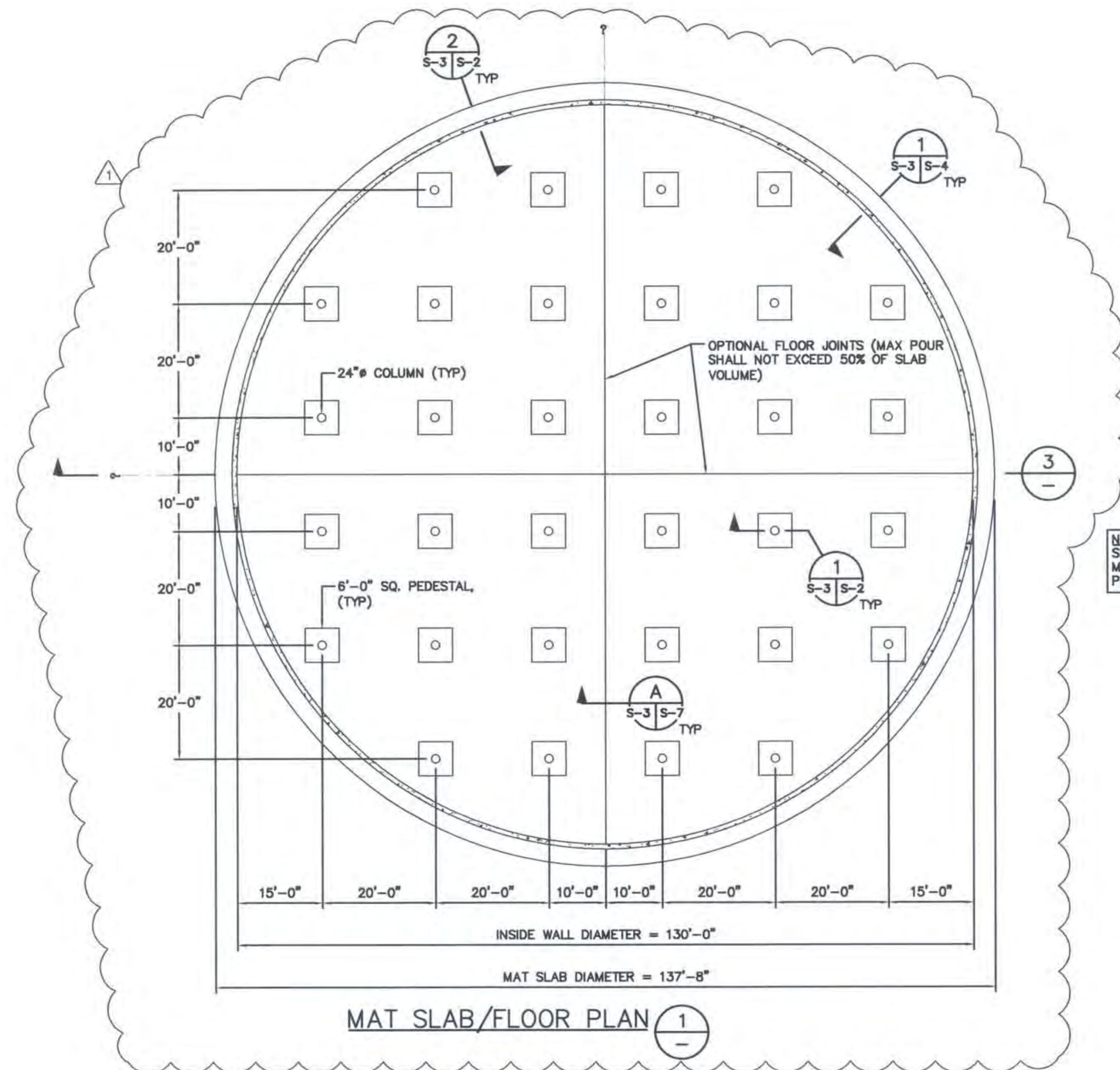
- I. DESIGN LOADS
- |                                    |  |
|------------------------------------|--|
| 1. SUPERIMPOSED ROOF LOAD          | : 100.0 PSF LIVE + 10.00 PSF DEAD                          |
| 2. LIQUID (WATER)                  | : 62.5 PCF   |
| 3. EFFECTIVE SEISMIC ACCELERATIONS | : 0.2500g (H), 0.1719g (V)                                 |
| 4. HORIZONTAL SEISMIC VELOCITY     | : 1,500 FT/SEC AT 7.699 SEC PERIOD AND 1/2% DAMPING        |
| 5. BACKFILL HEIGHT                 | : 1'-0" (MAX) ABOVE MAT SLAB<br>0'-0" (MIN) ABOVE MAT SLAB |
- II. BUCKLING CRITERIA OF WALL DESIGN
1. THE INTEGRITY OF THE WALL SHOWN ON THESE DRAWINGS IS STRICTLY PREDICATED ON THE FOLLOWING CONDITIONS:
- A. THE STRICT CONFORMANCE TO THE CLOSE STRESS-TOLERANCE AND OTHER REQUIREMENTS OF THE CIRCUMFERENTIAL PRESTRESSING APPLICATION INDICATED IN THE CIRCUMFERENTIAL PRESTRESSING NOTES ON DRAWING S-5 AND ON OTHER PARTS OF THESE DRAWINGS AND IN THE TECHNICAL SPECIFICATIONS.
- B. SEE SPECIFICATIONS FOR OUT OF ROUND TOLERANCE.
- C. THERE SHALL BE NO BLOCK-OUTS OR OTHER TYPES OF WALL OPENINGS OTHER THAN THOSE SHOWN ON THESE DRAWINGS.
- III. CONCRETE REQUIREMENTS
- |  |                    |
|--|--------------------|
| 1. MAT SLAB AND PIPE ENCASEMENTS   | : 4000 PSI         |
| 2. ROOF SLAB AND COLUMNS   | : 4000 PSI         |
| 3. COREWALL  | : 4500 PSI         |
| 4. SHOTCRETE   | : 4500 PSI (1C:3S) |
| 5. ALL CONCRETE SHALL HAVE 6.0 SK/CY (MIN) AND A MAX WATER CEMENT RATIO OF 0.42.                                       |                    |
| 6. SEE TECHNICAL SPECIFICATION FOR COMPLETE MIX DESIGN INFORMATION INCLUDING AGGREGATE SIZE AND ACCEPTABLE ADMIXTURES. |                    |
| 7. SEE TECHNICAL SPECIFICATION FOR CONCRETE PLACING AND FORMING PROCEDURES.  |                    |
- IV. REINFORCEMENT REQUIREMENTS
1. ALL REINFORCING IN TANK SHALL CONFORM TO ASTM A615 GRADE 60 UNLESS OTHERWISE NOTED ON THESE DRAWINGS.
2. REINFORCING STEEL CALLED OUT AS GALVANIZED SHALL HAVE A CLASS 1 COATING IN ACCORDANCE WITH ASTM A767.
- V. EARTHWORK REQUIREMENTS
1. MINIMUM COMPACTION OF AGGREGATE BASE AND SUBGRADE UNDER AND AROUND PIPE BLOCKS AND UNDER FLOOR AND FOOTINGS SHALL EQUAL 95% OF MAX DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D1557.
2. MINIMUM COMPACTION OF BACKFILL AROUND TANK SHALL EQUAL 90% OF MAX DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D1557. USE ONLY HAND HELD COMPACTION EQUIPMENT WITHIN 3' OF TANK WALL AND LIGHTWEIGHT EQUIPMENT BEYOND THE 3' SO AS NOT TO DAMAGE THE WALL. BRING UP THE BACKFILL AROUND THE TANK IN UNIFORM LIFTS. IF THE TANK IS EMPTY DURING THE BACKFILLING OPERATION AROUND THE TANK, THE INWARD MOVEMENT OF THE COREWALL MUST BE MONITORED AT VARIOUS LOCATIONS AROUND THE INSIDE CIRCUMFERENCE TO INSURE THAT A UNIFORM BACKFILL IS BEING ACHIEVED.
3. SEE CIVIL DRAWINGS AND TECHNICAL SPECIFICATIONS FOR COMPLETE REQUIREMENTS.
- VI. APPURTENANCE NOTES
1. WHERE APPURTENANCES REQUIRE ANCHORS TO BE PLACED IN THE WALL EXTERIOR, DRILL AND PLACE AFTER WRAPPING AND BEFORE FINAL SHOTCRETING. TAKE EXTREME CARE TO AVOID DAMAGING THE PRESTRESSING STRAND. PLACE A STEEL PIPE AROUND THE DRILL BIT TO KEEP THE DRILL BIT FROM COMING IN CONTACT WITH THE STRAND. INSTALL INSERTS BEFORE SHOTCRETING TO MARK HOLE LOCATION. FOR ALL TYPES OF ANCHORING SYSTEMS, INCLUDING DROP-IN AND EXPANSION WEDGE ANCHORS, FILL HOLE IN SHOTCRETE AND WALL WITH EPOXY BEFORE FINAL INSTALLATION OF ANCHORS TO INSURE COMPLETE COVERAGE AND PROTECTION OF THE STRAND.
2. ADHESIVE ANCHORS WITH 1 INCH MAXIMUM EMBEDMENT INTO THE SHOTCRETE MAY ONLY BE USED IN NON-STRUCTURAL APPLICATIONS AND WHEN APPROVED BY THE ENGINEER. WHEN DRILLING HOLES IN THE SHOTCRETE, THE DRILL MUST BE EQUIPPED WITH A POSITIVE STOP TO PREVENT DRILLING MORE THAN 1 INCH IN DEPTH. USE EPOXY ADHESIVE ANCHORS ONLY. THE HOLE SHALL BE COMPLETELY FILLED WITH EPOXY TO INSURE COMPLETE COVERAGE AND PROTECTION OF THE STRAND. DO NOT USE EXPANSION OR DROP-IN ANCHORS.
3. USE SST 316 BOLTS AND ANCHORS UNLESS NOTED OTHERWISE. WHERE SST BOLTS OR ANCHORS ARE IN CONTACT WITH DISSIMILAR METALS, USE INSULATING SLEEVES AND PHENOLIC WASHERS TO ELECTRICALLY ISOLATE THE BOLTS.
- VII. SPECIAL INSPECTION
1. SPECIAL INSPECTIONS IS REQUIRED FOR THIS PROJECT AND SHALL BE PERFORMED IN ACCORDANCE WITH THE 2001 CALIFORNIA BUILDING CODE (CBC), CHAPTER 17. SPECIAL INSPECTIONS SHALL BE PERFORMED BY A REGISTERED DEPUTY INSPECTOR EMPLOYED BY THE OWNER IN THESE CATEGORIES:
- CONCRETE PLACEMENT, STRUCTURAL WELDING, CONCRETE ANCHORS, REINFORCING STEEL PLACEMENT, GRADING, EXCAVATION, FILL PLACEMENT, AND PRESTRESSING.
- VIII. STRUCTURAL OBSERVATION
1. THE DESIGN ENGINEER, OR ANOTHER ENGINEER DESIGNATED BY THE DESIGN ENGINEER SHALL PERFORM STRUCTURAL OBSERVATION AS REQUIRED BY CBC SECTION 1702, AND AS DEFINED BY SECTION 220. STRUCTURAL OBSERVATION SHALL BE PROVIDED DURING THE STAGES OF CONSTRUCTION LISTED BELOW. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE AT LEAST 72 HOURS ADVANCE NOTICE TO THE DESIGN ENGINEER WHEN HIS WORK IS READY FOR STRUCTURAL OBSERVATION FOR EACH OF THESE STAGES:
- FIRST MAT SLAB POUR, FIRST ROOF POUR, FIRST WALL POUR, FIRST COLUMN POUR, PRESTRESSING

PN: ZJ36	REVISIONS			BENCHMARK ELEV. 15.829		FIELD BOOK	1"		CITY OF SACRAMENTO			Richard Brady & Associates		IMPROVEMENT PLANS FOR:		PLANNING NO.	DWG. NO.
	NO.	DESCRIPTION	DATE	DESCRIPTION: BM257-B3B		1448			DEPARTMENT OF UTILITIES			Civil Engineers and Construction Managers		WATER DISTRIBUTION IMPROVEMENTS		PN: ZJ36	S-1
	1	REDESIGN WITHOUT PILES	7-5-06 RLB	SAC COUNTY BM 1A-43 DISK IN		SCALE:			DRAWN BY: SDF			DESIGNED BY: RLB	CHECKED BY: MVB	3 MILLION GALLON ELKHORN RESERVOIR		WATER DWG. NO.	OF
	2			BRIDGE (E) OF ELKHORN BLVD.		H: _____			DATE: AUGUST 26, 2005			R.C.E. NO. 18330 DATE: 8/26/05	R.C.E. NO. 66993 DATE: 8/26/05	DRAWING INDEX, GENERAL NOTES		GIS GRID NO.	
	3			& NATOMAS BLVD. (S) SIDE		V: _____			ON ORIGINAL SCALE			4909 Murphy Canyon Road, Suite 220 San Diego, California 92123 Telephone 858.496.0500		Fax 858.496.0505		J13	







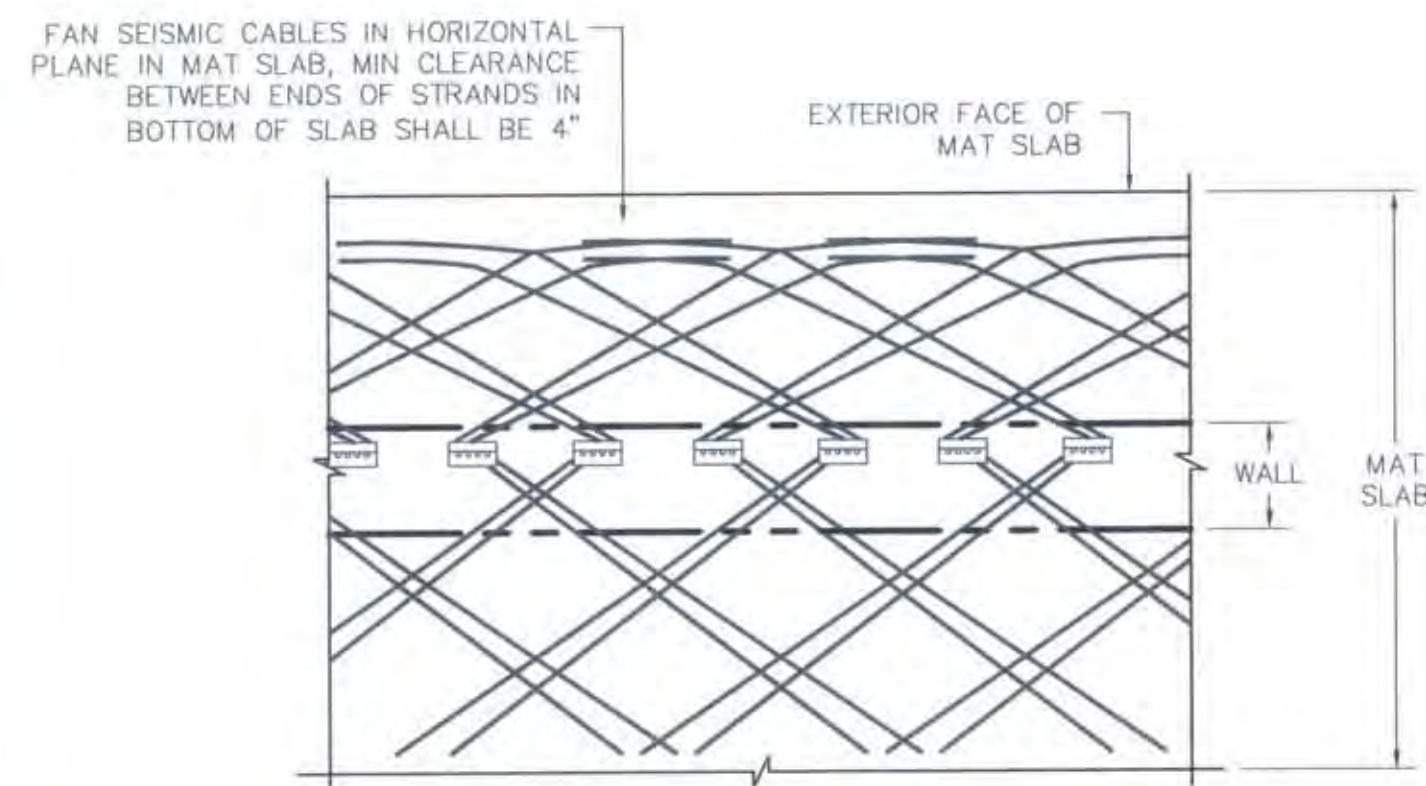


PN: ZJ36	REVISIONS				BENCHMARK ELEV. 15.829		FIELD BOOK		<div>1"</div>		CITY OF SACRAMENTO DEPARTMENT OF UTILITIES						Richard Brady & Associates Civil Engineers and Construction Managers 4909 Murphy Canyon Road, Suite 220 San Diego, California 92123 Telephone 858.496.0500						IMPROVEMENT PLANS FOR: WATER DISTRIBUTION IMPROVEMENTS 3 MILLION GALLON ELKHORN RESERVOIR TANK PLANS AND SECTION						PLANNING NO.		DWG. NO.	
	DESCRIPTION		DATE		DESCRIPTION: BM257-B3B		1448																						S-3			
	NO.	DESCRIPTION	DATE	RLB	BM257-B3B		SCALE:		ON ORIGINAL SCALE		DRAWN BY: SDF		DESIGNED BY: RLB		CHECKED BY: MVB		PN: ZJ36		SHEET													
	1	REDESIGN WITHOUT PILES	7-5-06	RLB	SAC COUNTY BM 1A-43 DISK IN		H: _____		DRAWING ADJUST		DATE: AUGUST 26, 2005		R.C.E. NO. 18330 DATE: 8/26/05		R.C.E. NO. 66993 DATE: 8/26/05		WATER DWG. NO.		OF													
	2				BRIDGE (E) OF ELKHORN BLVD.		V: _____		SCALED DIMENSIONS								J13															
	3				& NATOMAS BLVD. (S) SIDE				IF THIS DOES NOT								GIS GRID NO.															
4				OF ELKHORN BLVD				SCALE AT 1"								TANK PLANS AND SECTION																



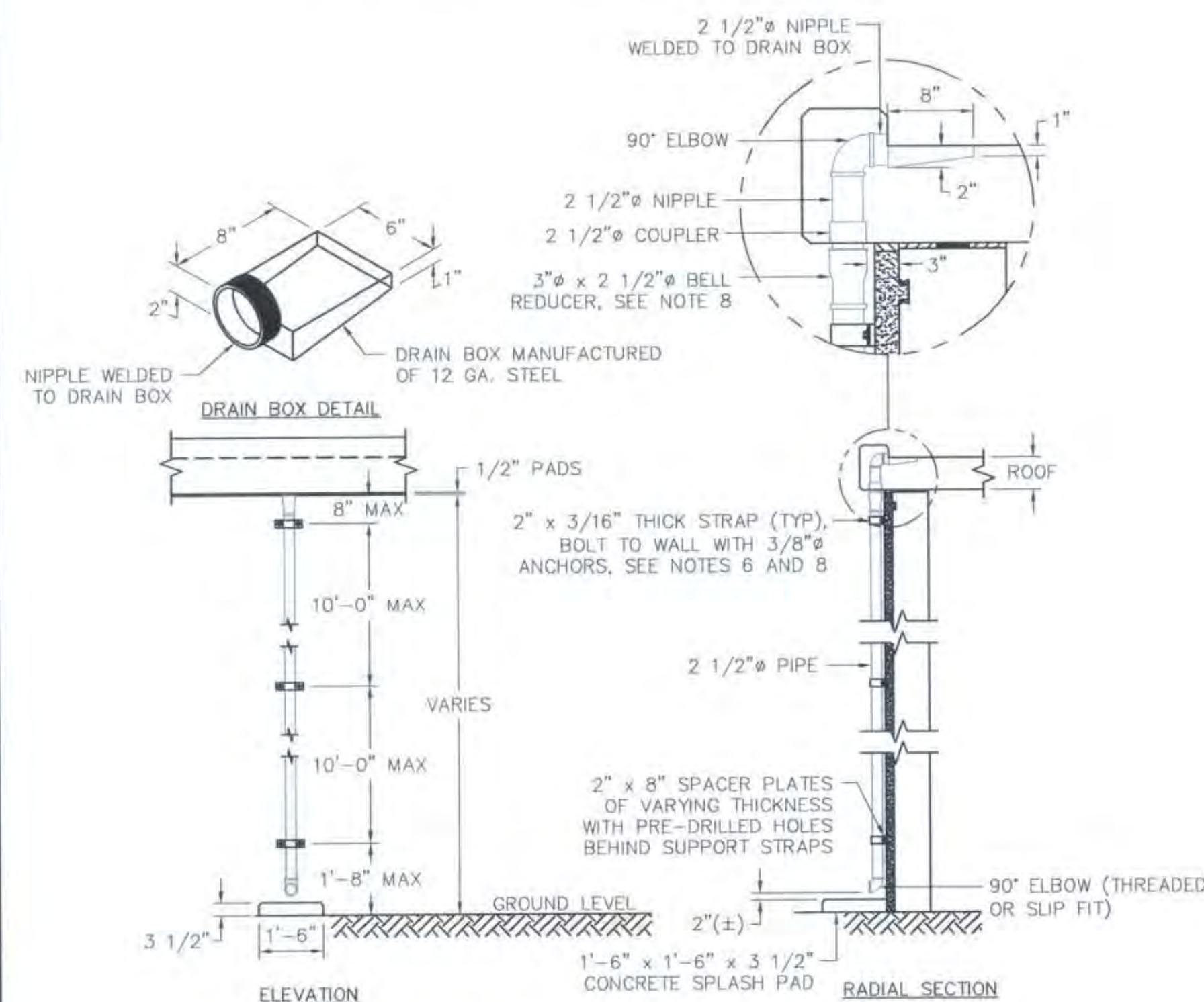






PLAN OF SEISMIC CABLES IN MAT SLAB 1

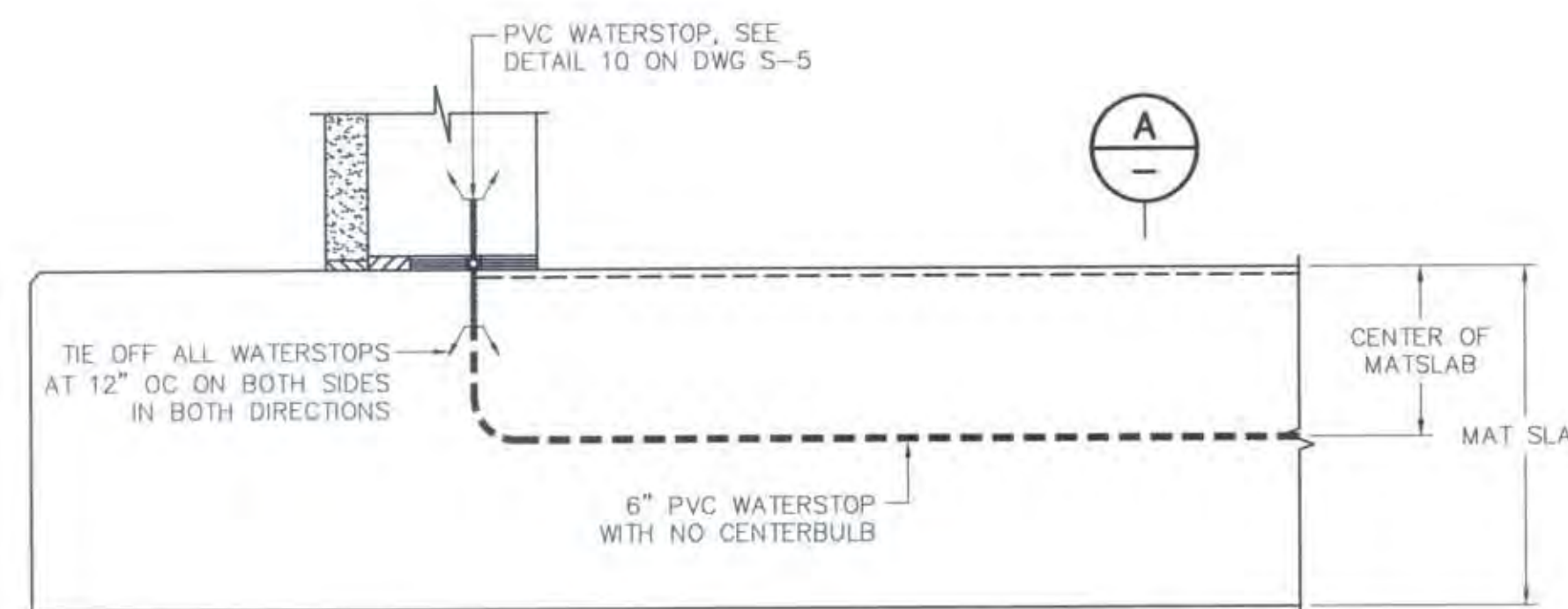
NOTE:  
SEISMIC CABLE SET MAY BE PLACED ON EITHER SIDE OF WALL, 3" CLEARANCE TO EDGE OF MAT SLAB MUST BE MAINTAINED



DOWNSPOUT DETAILS 5

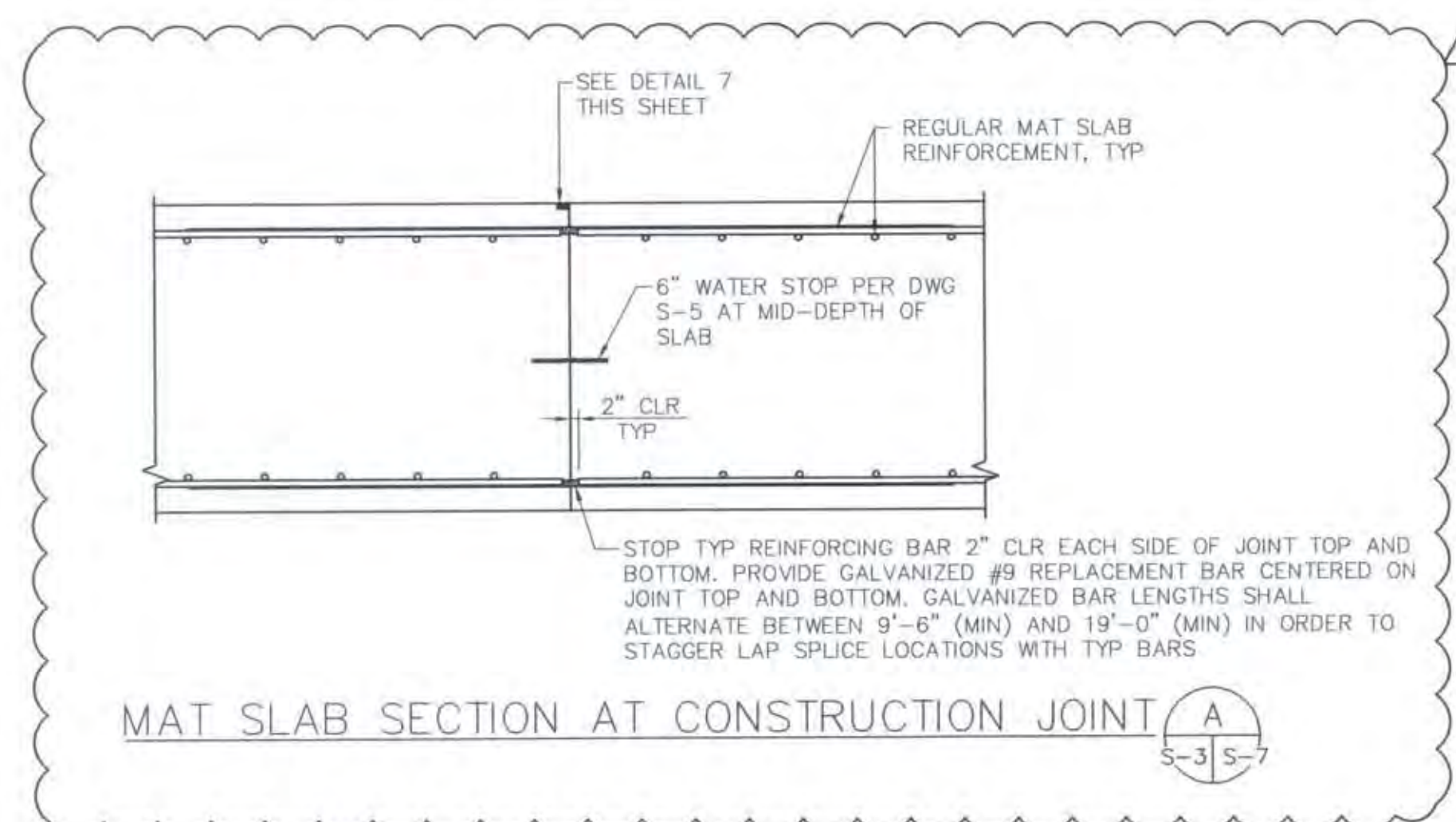
DOWNSPOUT NOTES:

- 1) DRAIN BOX, SPACER PLATES AND STRAPS TO BE MANUFACTURED OF CARBON STEEL WITH A MINIMUM YIELD STRENGTH OF 30 KSI.
- 2) DRAIN BOX, SPACER PLATES AND STRAPS TO BE HOT-DIP GALVANIZED AFTER FABRICATION AND DRILLING.
- 3) PIPE TO BE SCH 10 (MIN) GALVANIZED CARBON STEEL.
- 4) PLACE DRAIN BOX TO CLR ROOF STEEL BY 2" (TYP), SOME #4 GIRC BARS IN ROOF EDGE MAY TOUCH PIPE FITTINGS TO MAINTAIN REQUIRED CONCRETE COVERAGE.
- 5) USE SST 316 FOR ALL BOLTS UNLESS NOTED OTHERWISE.
- 6) WHERE SST BOLTS ARE IN CONTACT WITH DISSIMILAR METALS, USE INSULATING SLEEVES AND PHENOLIC WASHERS TO ELECTRICALLY ISOLATE THE BOLTS.
- 7) WHERE SST BOLTS ARE PLACED IN THE WALL EXTERIOR, DRILL AND PLACE AFTER WRAPPING AND BEFORE SHOTCRETING, TAKE EXTREME CARE TO AVOID DAMAGING PRESTRESSING STRAND, PLACE A STEEL PIPE AROUND THE DRILL BIT TO KEEP BIT FROM COMING IN CONTACT WITH THE STRAND, INSERT BOLTS BEFORE SHOTCRETING TO MARK HOLE LOCATION, PACK HOLE IN SHOTCRETE WITH EPOXY BEFORE FINAL INSTALLATION OF BOLTS TO INSURE COMPLETE COVERAGE OF STRAND.
- 8) THE 2 1/2" NIPPLE SCREWS INTO THE BOTTOM SIDE OF THE ENCASED COUPLER, THE 3" BELL REDUCER DOES NOT ATTACH TO THE PIPE WITH THREADS, BUT ACTS AS A FUNNEL, THIS ELIMINATES THE PROBLEM ARISING OUT OF SLIGHT MISALIGNMENT OF THE COUPLING.

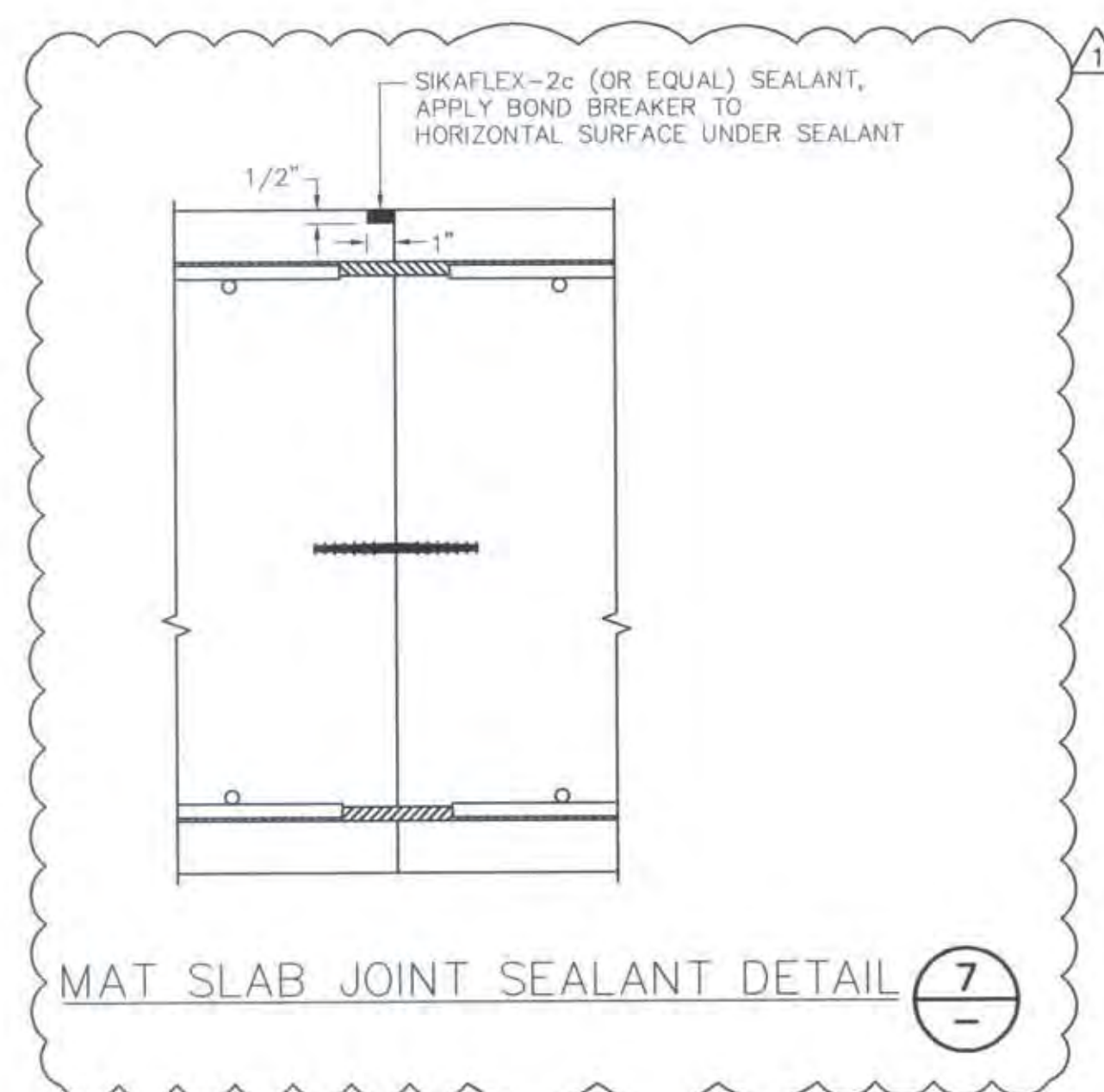


RADIAL SECTION OF WATERSTOP IN OPTIONAL MAT SLAB JOINT 2

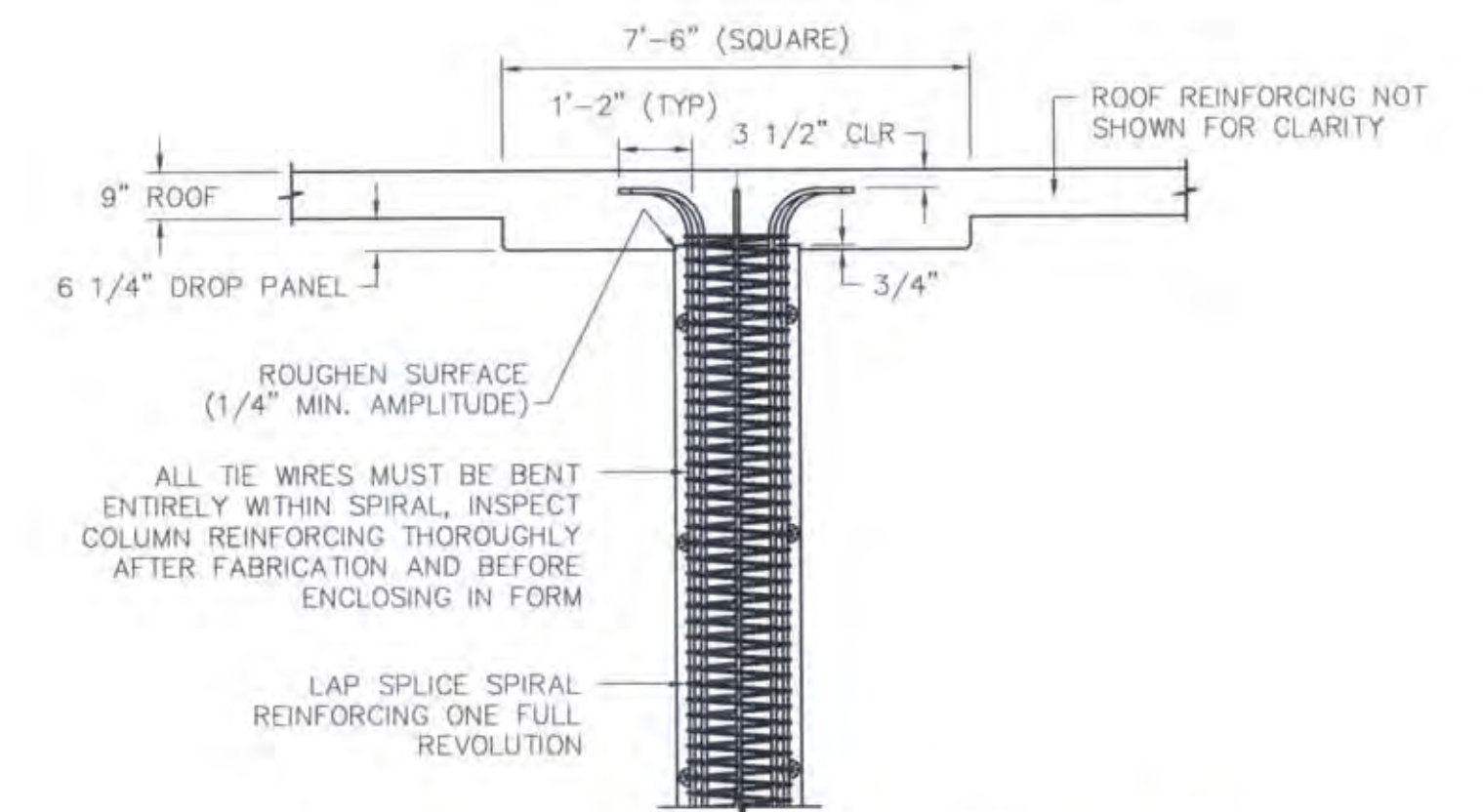
(WALL AND MAT SLAB REINFORCEMENT OMITTED FOR CLARITY)



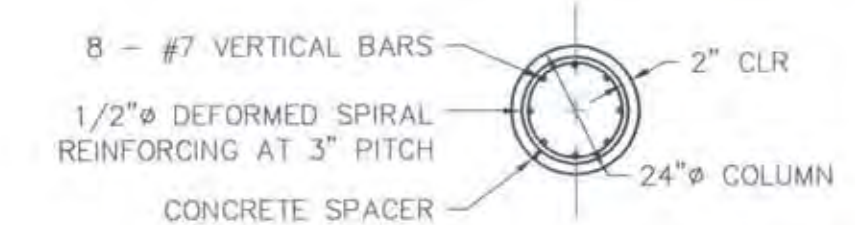
MAT SLAB SECTION AT CONSTRUCTION JOINT 3



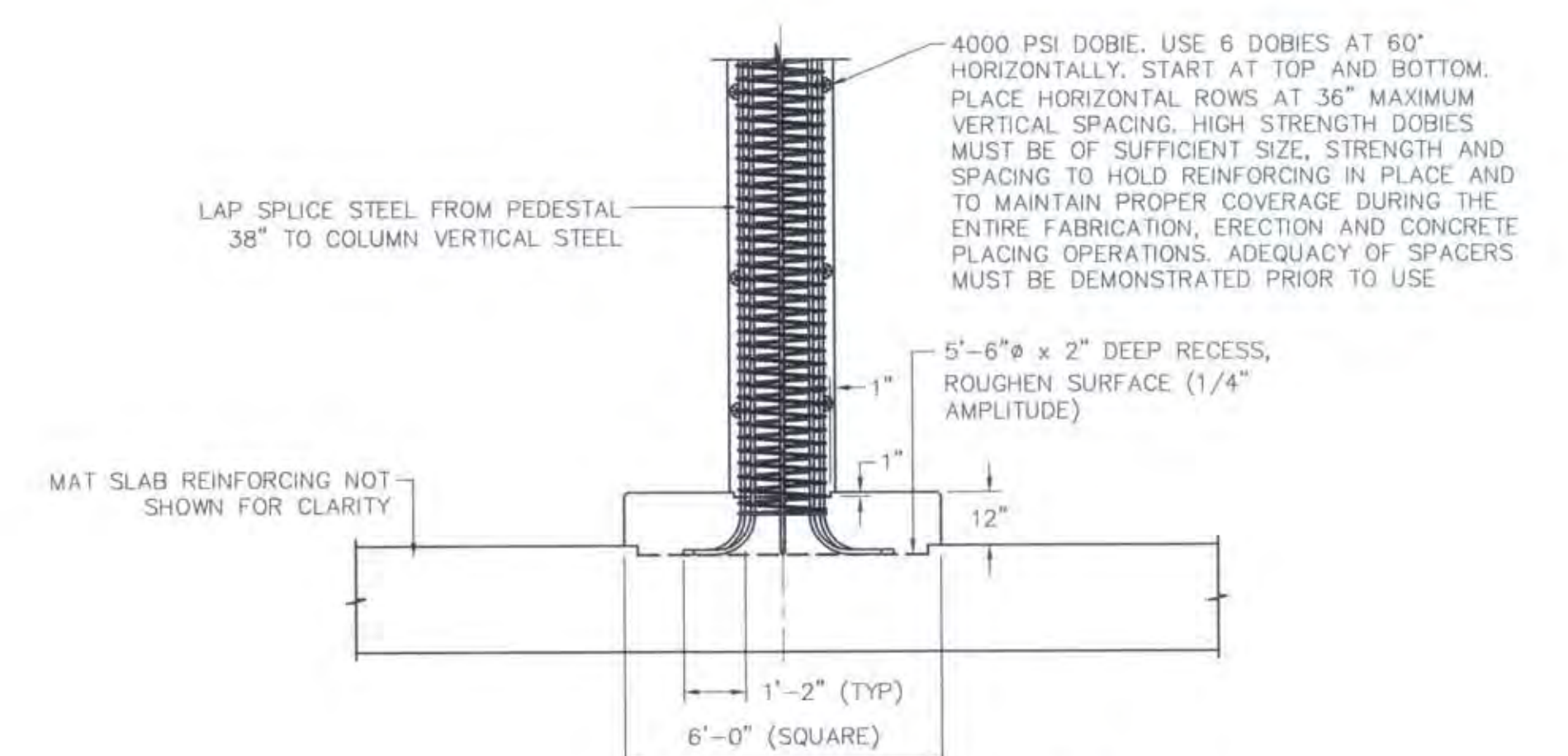
MAT SLAB JOINT SEALANT DETAIL 7



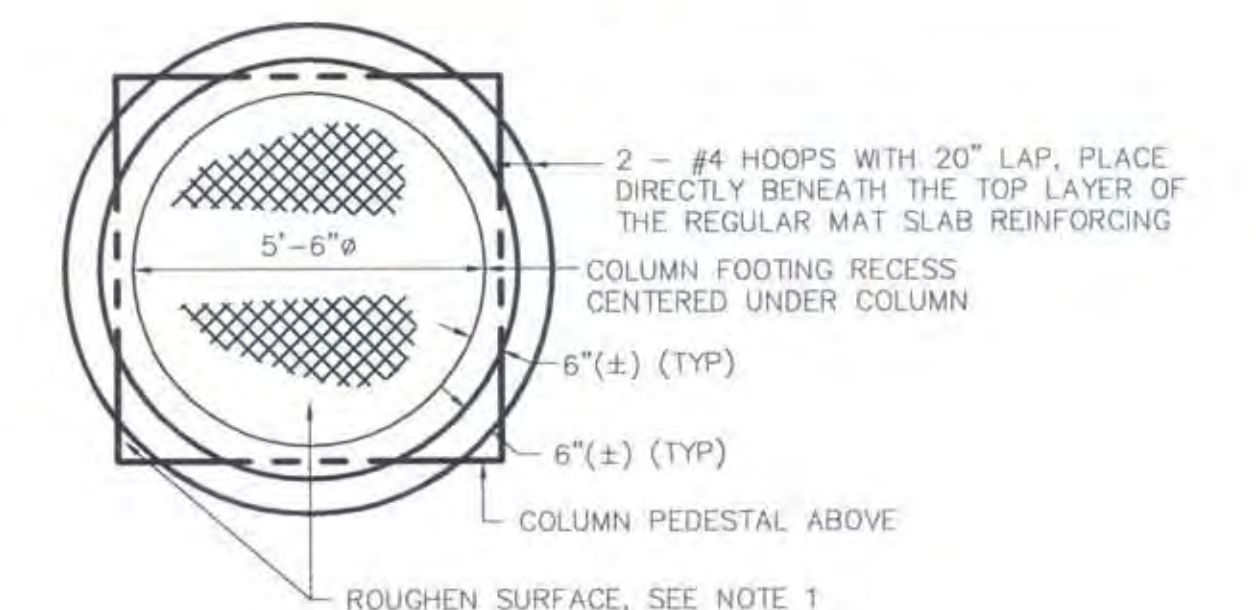
COLUMN TO ROOF CONNECTION 3



COLUMN SECTION 4



COLUMN PEDESTAL 6



PLAN OF COLUMN PEDESTAL RECESS 8

COLUMN PEDESTAL NOTES:

- 1) COLUMN PEDESTAL RECESSES SHALL BE ADEQUATELY ROUGHENED AND CLEANED OF CURING COMPOUNDS BY SANDBLASTING, OR EQUAL, PRIOR TO POURING THE COLUMN PEDESTAL.
- 2) POUR A 1/2" THICK LAYER OF (1C:1S) MIX AT THE COLUMN PEDESTAL RECESS IMMEDIATELY PRIOR TO BEGINNING THE COLUMN PEDESTAL POUR.
- 3) POUR A 1" THICK LAYER OF (1C:1S) MIX AT THE BASE OF THE COLUMNS IMMEDIATELY PRIOR TO BEGINNING THE COLUMN POUR.

PN: ZJ36

REVISIONS			
NO.	DESCRIPTION	DATE	RLB
1	REDESIGN WITHOUT PILES	7-5-08	RLB

BENCHMARK	ELEV. 15.829
DESCRIPTION:	BM257-B3B
SAC COUNTY BM 1A-43 DISK IN BRIDGE (E) OF ELKHORN BLVD. & NATOMAS BLVD. (S) SIDE OF ELKHORN BLVD.	

FIELD BOOK	1448
SCALE:	ON ORIGINAL SCALE DRAWING ADJUST SCALED DIMENSIONS IF THIS DOES NOT SCALE AT 1"
H:	
V:	

CITY OF SACRAMENTO DEPARTMENT OF UTILITIES			
DRAWN BY: SDF	DESIGNED BY: RLB	CHECKED BY: MVB	
DATE: JULY 15, 2005	R.C.E. NO. 18330 DATE: 7/15/05	R.C.E. NO. 66993 DATE: 7/15/05	

Richard Brady & Associates  
Civil Engineers and Construction Managers  
4909 Murphy Canyon Road, Suite 220  
San Diego, California 92123  
Telephone 619.498.0500 Fax 619.498.0501

IMPROVEMENT PLANS FOR:  
**WATER DISTRIBUTION IMPROVEMENTS**  
**3 MILLION GALLON ELKHORN RESERVOIR**  
**MAT SLAB, COLUMN AND DOWNSPOUT DETAILS**

PLANNING NO.	DWG. NO.
PN: ZJ36	S-7
WATER DWG NO.	SHEET
GIS GRID NO. J13	OF